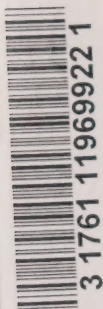


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Government
Publication



Preliminary submission
to the Commission on
Ontario Hydro long range planning



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May 1, 1975



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Douglas J. Gordon, President



May 14, 1975

Dr. Arthur Porter
Chairman
Commission of Enquiry Into the
Long Range Planning of
Ontario's Power Needs
c/o Department of Industrial Engineering
University of Toronto
Rosebrugh Building
Toronto, Ontario

Preliminary Submission
of Ontario Hydro

Dear Dr. Porter:

During our meeting with you, on March 26, we informed you that we were in the process of preparing a document which we felt would be useful as a backgrounder for the preliminary hearings.

This document, entitled: "Preliminary Submission of Ontario Hydro to the Independent Commission of Enquiry on Long Range Planning Concepts" (5 copies enclosed) has four purposes:

- a) to provide background information regarding Ontario Hydro;
- b) to provide a list of specific questions and subjects which might be considered by the Commission at its hearings. Some of these questions and subjects have been raised in letters received from interested parties on receipt of the Long Range Plan Document 556 SP;
- c) to explain Hydro's views as to the urgent requirements for decisions on particular projects which must be initiated during the tenure of the Commission and on which the Commission has been asked to report on the question of need;
- d) to provide some suggestions on a possible order in which to deal with the matters to come before the Commission.

Dr. A. Porter

-2-

May 14, 1975

As indicated in the statement by the Hon. Allan Grossman on March 13, 1975, the question on the need for certain priority projects should receive the early consideration of the Commission. These projects have been assigned priority because if decisions on need are deferred until the Commission has completed its work, there will be insufficient time to meet in-service dates to enable Hydro to meet forecast load requirements. On page 26 of the enclosed document we have outlined our suggestions for a procedure for dealing with these priority projects. The report on the initial phase of the public participation procedure will provide information regarding the load forecast, the specific facilities recommended, alternate facilities to supply the load, public concerns, and the potential environmental impacts.

We are now aiming for the following dates on which these initial reports, undertaken separately for the four priority projects, will be available to the Commission:

- a) North Channel GS and a transmission line
to the Sudbury area - August 1975
Transmission line to Toronto - March 1976
- b) Southwestern Ontario transmission - January 1976
- c) Supply to Ottawa-Cornwall - February 1976
- d) Four new generating sites in the
East System - January 1976

You will note that we have added to the list of priority projects four new generating sites on the East System. You will also recall that mention was made of the need to proceed during the tenure of your Commission with the public participation process on some new generating sites, in my transmittal letter of September 30, 1974 for the distribution of the Long Range Planning Report 556 SP. However, there may be some confusion in the minds of the public with respect to all of these specific priority projects, and there will be other "specials" because our planning process is a "moving train," to use an oft-quoted analogy from the 1974 OEB Hearings. Accordingly, it might be helpful if you were to make an early statement recognizing that load growth and system expansion is a continuous process, requiring the early approval of the priority projects in order to maintain accustomed standards of service.

..... /3

Dr. A. Porter

- 3 -

May 14, 1975

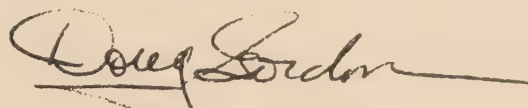
As part of the public participation on the specific projects, we are trying out a new technique. This involves a number of seminars, with the objective of providing interest groups and Government Ministries with an opportunity to understand the methods which we plan to use in siting lines and facilities and to make constructive suggestions to improve these methods. Three seminars are planned with groups whose principal interests are: community planning (May 8-10); agriculture (May 22-24); and environment (June 5-7). Subsequently, a combined workshop of representatives from all three seminars will be held on June 19-21, at which time the focus will be on discussing the differences concerning land use which are held by the various groups. The results of this work will be reflected in specific area studies and in regional meetings planned when the specific studies are announced.

As I said, we are experimenting with a new technique and we hope that these seminars will be helpful to the interest groups. I understand that the reaction of the first group, community planning, held on May 8-10, was favourable.

We are forwarding the Preliminary Submission, by copy of this letter, to the Deputy Ministers of the Provincial Government Ministries and other designated staff contacts. You may wish to make it available to certain interested members of the general public.

If you have any questions concerning the document, I suggest that you contact Mr. John P. Dobson, Manager - Rate and System Expansion Hearings. You will find John Dobson a willing and experienced Hydro contact for these Long Range Hearings.

Yours very truly,



D.J. Gordon
President

Atts.

copies to:

Deputy Ministers of the Government of Ontario
and Positions with the Rank and Status of a
Deputy Minister and their designated staff.

Mr. R.B. Taylor
Mr. J.P. Dobson

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0.0 INTRODUCTION

The purposes of this Preliminary Submission to the Commission headed by Dr. Arthur Porter, are as follows:

- (a) To provide background information regarding Ontario Hydro, Ontario's electric power system and the long range planning process;
- (b) To provide a list of specific questions and subjects which might be considered by the Commission at its hearings, based on the experience of Ontario Hydro and the concerns of members of the public that have been brought to the attention of Ontario Hydro in recent years;
- (c) To explain Hydro's views as to the urgent requirements for decisions on particular projects which must be initiated during the tenure of the Commission and as to which the Commission has been asked to report on the question of need;
- (d) To suggest a possible order in which to deal with the matters to come before the Commission.

There are eight basic matters to be considered in planning and implementing changes in the electric power system. They are the:

- (i) need for facilities,
- (ii) type of facilities,
- (iii) location of facilities,
- (iv) design and construction of facilities,
- (v) operation and maintenance of facilities,
- (vi) financial and economic considerations,
- (vii) trade-offs inherent in considering the above matters,
- (viii) coordination with government.

The planning criteria applied by Ontario Hydro with respect to these matters in the past has resulted in an electric power system that has functioned well to date. The following statement was made in 1972 by Task Force Hydro which had been established by the Committee on Government Productivity of Ontario.

" In spite of the need to reassess Hydro in the light of requirements for the decades ahead, the cooperative partnership between Ontario Hydro, the municipalities and the Government of Ontario has been a dramatic success story. One of the most rapid rates of industrialization in the world has been served and facilitated and Ontario residents have been provided with electricity at very low rates compared with other provinces and the United States without the inconvenience and economic loss experienced through brownouts. At the same time, Ontario Hydro has achieved a reputation among its peers as a world leader. It has been of immeasurable service to the Province of Ontario."

Ontario Hydro welcomes a critical examination of its current planning criteria to ensure that the broad planning principles and concepts to be used by it in expanding the system in the future will accord with the views of the people whom Ontario Hydro seeks to serve.

It will be quite apparent that an important part of this examination will relate to the participation in the planning of the electric power

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1 system by groups and persons outside Ontario Hydro, including other arms of
2 government, federal, provincial, and local. Ontario Hydro hopes that the
3 Commission will recommend guidelines with respect to each of the matters
4 enumerated above to be followed by Ontario Hydro in planning and
5 implementing future changes in the system. Such guidelines will require
6 complex trade-offs among various community concerns and values. It would be
7 of great assistance to Ontario Hydro to receive the recommendations of the
8 Commission as to the proper role to be played by Government and the general
9 public in making their views known to Ontario Hydro in a timely manner, so
10 that such views can be reflected in the planning process.
11

12 It is hoped by Ontario Hydro that this Preliminary Submission will be
13 of assistance to the Commission and to persons interested in its work,
14 particularly during the preliminary hearings in which the procedures and the
15 priorities for the main hearings must be established.
16

17
18 The Honourable Allan Grossman referred in his statement of March 13,
19 1975, to the system expansion projects requiring the Commission's
20 recommendations as to need on a priority basis. It is of particular
21 importance that provision be made during the preliminary hearings to assure
22 timely decisions on the priority projects to be considered by the
23 Commission.
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1.0 GENERAL INFORMATION

1.1 The Actual Process of Planning Ontario Hydro's Future Power System and Implementing Specific Projects

Forecasts of future conditions are always subject to uncertainty. The further into the future that one extends a forecast, the greater is the uncertainty in the forecast; that is, the greater will be the likelihood of substantial differences between the forecast conditions and those which actually occur.

Uncertainty exists concerning many factors which affect the planning and implementing of Ontario Hydro's projects. It exists particularly with respect to:

- . the future electric load which is determined by economic conditions and social preferences in the Province, and
- . the alternative means that will be available to supply the future load.

It is only by recognizing these uncertainties that participants at the Hearing will understand the actual step-by-step process of planning the future electric power system and of implementing specific projects. Ordinarily, this process hinges upon the selection of a commitment date that represents striking a critical balance between acting early and thereby increasing the risk of error and acting late and thereby incurring extremely heavy incremental costs in the future. These costs result from the enforced use of fossil fired generating stations with higher operating costs while waiting for new generating stations with lower operating costs to come on stream. These increased costs can reach substantial proportions in a relatively short time. For instance, it is now estimated that the deferment of the Darlington Nuclear Generating Station for one year will result in an additional cost of \$500 million for fossil fuel over and above the estimated cost of the nuclear fuel replaced.

It must be borne in mind that the public participation procedures have lengthened the over-all lead times for most of Ontario Hydro's projects. In the long run, Ontario Hydro will be able to extend its schedules to include adequate time for the public participation process. However, the injection of this process into recent schedules has in many cases so lengthened the lead times that a number of projects will not come into service by the time required.

The process of planning a particular change or addition to the electric power system involves two factors: determining the nature of the change or addition, and determining the time when it should come into service. With this information, one can determine the time at which it must be finally committed for design and construction.

In determining the nature of a facility, it is necessary to examine long range projections of future electric system development for periods up to 20 or more years ahead, in order to determine whether the proposed facility will:

- (i) be needed;
- (ii) meet technical, and economic constraints;
- (iii) meet expected future environmental and social constraints foreseen by the regulatory agencies;
- (iv) serve a useful function throughout its life;

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- 1 (v) provide sufficient flexibility to allow Ontario Hydro to meet the
2 uncertainties of the future; and
3
4 (vi) not preclude future development of substantially superior projects, if
5 and when they become available.
6

7 In determining when a facility should come into service, and hence in
8 determining when it must be committed for design and construction, the
9 primary emphasis is upon:
10

- 11 . the load forecast from the present to the time the facility should come
12 into service, and not on the load forecast beyond that time. In practice,
13 this means the load forecast extending 10 to 12 years into the future.
14
15 . the alternative facilities which can be developed in this time span of 10
16 to 12 years. These alternatives are largely confined to those which are
17 currently feasible from the technical, environmental, social, and economic
18 viewpoints.
19

20 Thus, Ontario Hydro's policy is to commit new projects only as their
21 commitments become necessary, to attempt to ensure that they will be useful
22 throughout their life, and to maintain flexibility for meeting actual
23 conditions as they arise in the future. From this viewpoint, and
24 recognizing the uncertainty of the future, it is not reasonable that Ontario
25 Hydro have a single, specific, fixed, year-by-year program of new facilities
26 for the next 20 years. In practice, such a program would have little
27 practical value because it would be necessary to change it from time to
28 time, as future events unfold.
29

30 Despite this fact, Ontario Hydro has been criticized by the public and
31 some government ministries for not having a single, specific, fixed, year-
32 by-year program of new facilities for the next 20 years.
33

34 It is suggested that the Commission address itself to this conflict of
35 views.
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1.2 Ontario Hydro Report 556 SP

On July 11, 1974, the Minister of Energy made public Report No. 556 SP of Ontario Hydro entitled "Long-Range Planning of the Electric Power System" with the intent that it be made the basis for discussion of Ontario Hydro's long range plans. The essential nature of that Report may have been misunderstood by some persons and therefore is summarized as follows.

The Report Is:

The Report Is Not:

- | | |
|--|--|
| <p>a. A statement of factors to be considered in planning the future electric supply system.</p> | <p>Ontario Hydro's specific program for developing new generation and transmission. Ontario Hydro has no single specific program for the complete period up to 1995.</p> |
| <p>b. A statement dealing with generation and bulk power transmission facilities.</p> | <p>A statement dealing with area supply, sub-transmission and distribution facilities.</p> |
| <p>c. A set of scenarios indicating the effect that different load growths could have.</p> | <p>A statement of the specific future load growth that will actually occur. Ontario Hydro does not know what this will be.</p> |
| <p>d. An indication of the many uncertain intangible and conflicting factors which will affect the actual course of future electric system planning, and which are directly or indirectly taken into account by Ontario Hydro.</p> | <p>A statement of the best way to achieve trade-offs among these factors.</p> |
| <p>e. An indication of the direction to be taken in the actual development of the future electric power supply system.</p> | <p>A statement of the best solution to future development. Ontario Hydro does not know the best solution.</p> |

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1.3 Layman's Description of the Electric Power Supply System in Ontario

1.3.1 Main System Components

The main system components are:

- (i) Generators. These produce the electricity.
- (ii) Transformers. These change electric voltage upward or downward, as required.
- (iii) Transmission and Distribution Lines. These transport electricity from the point of generation to the point of use at customers' premises.

1.3.2 Generation

Electricity is produced in generators which are driven by turbines or engines. They include:

- (i) Fossil-Fuelled (coal, lignite, gas, oil)
Steam-Electric Stations

The turbines of these stations are driven by steam produced from heat, which is obtained by burning fossil fuels.



Lakeview
Generating
Station

- (ii) Nuclear-Fuelled Steam-Electric Stations

The turbines of these stations are driven by steam produced from heat which is obtained from nuclear fission.

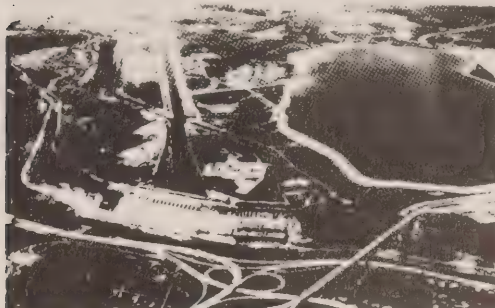


Pickering
Generating
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(iii) Hydraulic Stations

The turbines of these stations are driven by water falling through a vertical height.



Sir Adam Beck No. 1,
Sir Adam Beck No. 2,
and the
Pumping-Generating Station

(iv) Hydraulic Pumped Storage Stations

The turbines of these stations are driven by water falling through a vertical height. However, in this case the water is pumped into an upper reservoir when the electric load is low and then allowed to fall through the turbines to generate electricity during hours when the electric load is high. The top right part of the above photograph shows the pumped storage reservoir at the Sir Adam Beck Station.

(v) Combustion Turbines and Diesels

These units are driven by hot gas produced by the combustion of fossil fuel.



Combustion Turbines
at the
Sarnia-Scott
Transformer Station

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1.3.3 Bulk Power Transmission

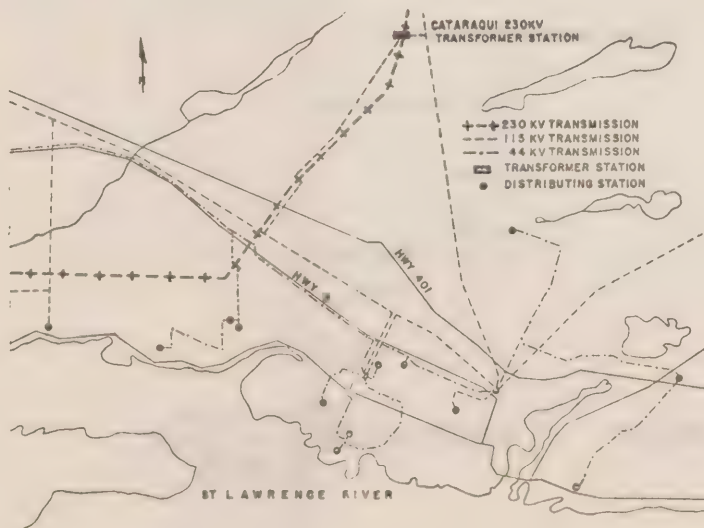
Electricity from generators is generally stepped up in transformers to a higher voltage for transport over a transmission system extending from the generating stations to centres of use, or load centres. Ontario Hydro's bulk power transmission lines generally operate at voltages of 500 kV (500,000 volts), 230 kV, or 115 kV. The bulk power transmission network is designed so that the generation at a number of diverse locations can be used to supply the main load centres. Figure 1 on the next page shows a diagram of the bulk power transmission in Ontario Hydro's East System. Each line in the diagram represents a transmission tower line, on which one or more transmission circuits may be suspended.



A 230 kV Double-Circuit Tower

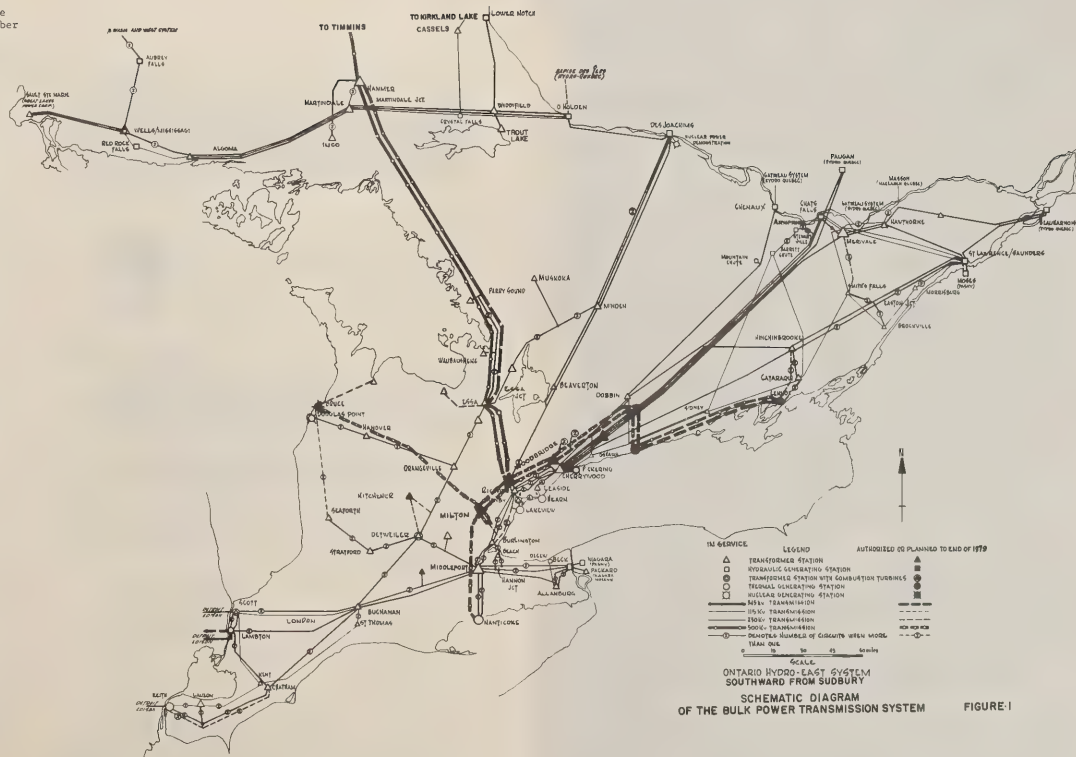
1.3.4 Area Supply and Subtransmission

Near the load centres, electricity is taken from the bulk power transmission network and stepped down through transformers to lower voltages for transmission to locations closer to the loads. Voltages may range from 230 kV to 27.6 kV. This drawing shows the area supply and subtransmission in the vicinity of Kingston.



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1.3.5 Distribution

At the load centres, electricity is stepped down through transformers to lower voltages, for distribution to locations adjacent to ultimate customers. At these locations the voltage is stepped down further to deliver electricity to customers at the voltages they use. Small customers take electricity at 115 volts or 230 volts but large customers take electricity at higher voltages. This photograph shows a pole-top transformer which steps down voltage from 4 kV to the 115 or 230 volts used by customers in a residential subdivision.



A Pole-Top Distribution Transformer

1.3.6 Ownership of Facilities

In Ontario most of the distribution outside the areas served by municipal utilities, and most of the generation, bulk power transmission, area supply and subtransmission, are owned by Ontario Hydro. However, some are owned by private companies (Great Lakes Paper Corporation, Abitibi Pulp and Paper Company, etc.), and some are owned by municipalities (Orillia, Ottawa, etc.).

Distribution within the municipalities is generally owned by the municipalities. They buy bulk power from Ontario Hydro and retail it to their customers.

1.3.7 Loads

In 1973, primary energy sales to Ontario customers by Ontario Hydro and the municipal electric utilities were as follows:

	Millions of kWh	Percent
Industrial, Commercial and Other Utilities	51,210	71.3%
Residential and Street Lighting	18,785	26.2%
Farm	1,789	2.5%
TOTAL	71,784kWh	100.0%

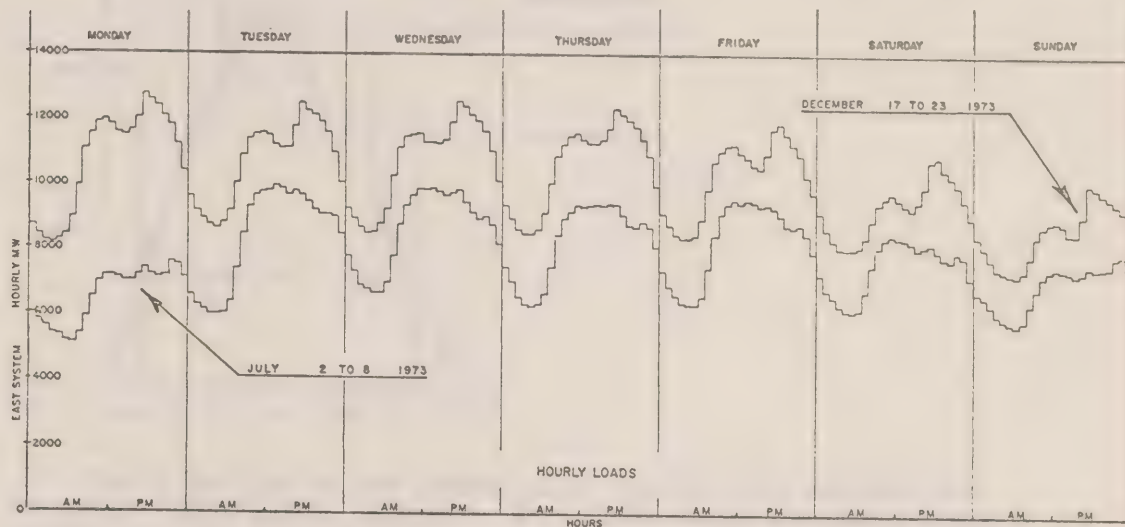
The ultimate components of Ontario Hydro's load arise from hundreds of diverse uses:

Water heaters, milking machines, household lights, blenders, chick brooders, mixers, saws, radios, tvs, furnaces, washers, dryers,

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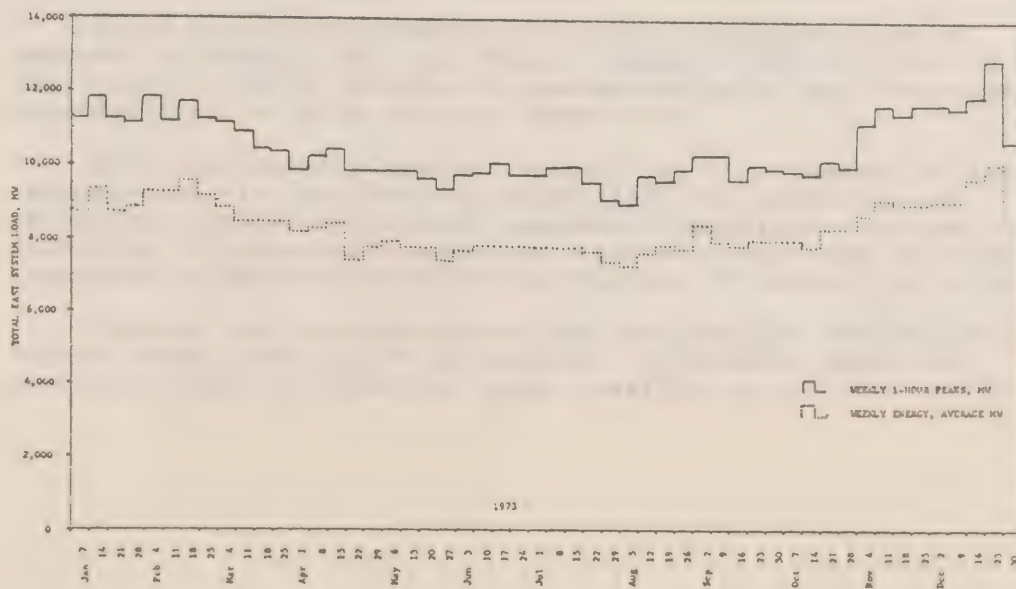
refrigerators, stoves, floodlights, streetcars, boring mills, grinders, rolling mills, electrochemical equipment, etc.

The patterns of use of each individual component are very diverse. However, their combined use results in total loads on the system which have relatively orderly patterns. This figure shows the clock-hour load over a December week and over a July week for Ontario Hydro's East System.



In both seasons the load is highest in daytime and lowest in nighttime and on weekends. The summer load is lower and has a flatter shape during the daytime. Winter daily peaks tend to occur in the hour from 5 to 6 pm, whereas those in the summer tend to occur at almost any hour in the day from 8 am to 6 pm.

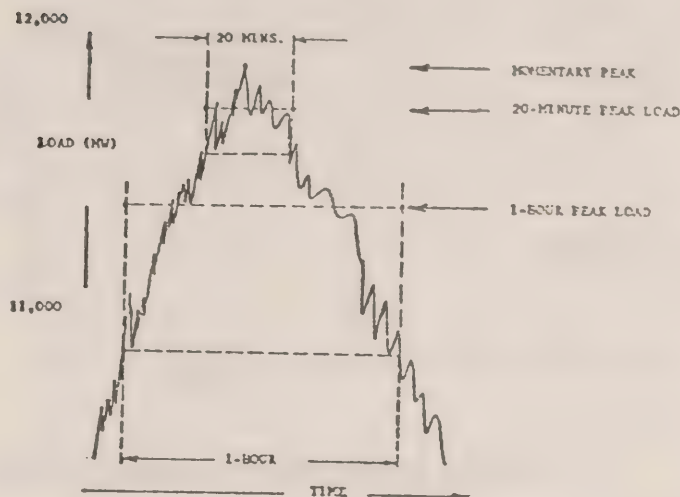
The load patterns change in other months of the year and also may change from year to year. This figure shows the peak loads for each week and the energy, or average load, for each week throughout a year.



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Summer loads are substantially lower than winter loads. The reduced loads in the non-winter period shown in the above figure enable Ontario Hydro to carry out the planned maintenance of its generating units in this period.

Within any hour the load is not constant as shown in these figures, but varies from instant to instant as shown below:



The planning of the system must provide for meeting the momentary peak load. However, for statistical purposes, peak loads may be reported on a variety of bases, namely, in terms of momentary peak, 20-minute peak (which is the average load over a 20-minute period), one-hour peak, or clock-hour peak.

The load characteristics affect the operating conditions which must be met by the various power resources on the system. Ontario Hydro must have the ability to regulate the generator outputs to meet quickly changing demands. Ontario Hydro must be capable of reducing the energy production during the nighttime hours, of increasing it rapidly in the morning as load builds up, and of reducing it rapidly as the load falls off.

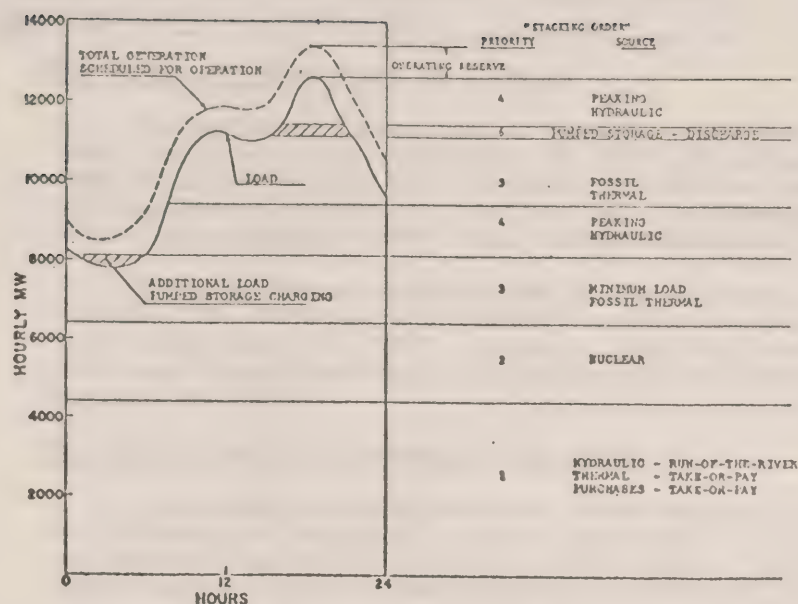
1.3.8 Operation of Generation

On an hour-by-hour basis, available generation must be operated to supply the load fully. Ontario Hydro's first consideration is to operate the system reliably, and its second consideration is to do this at lowest cost.

With the existing system, reliability requirements of the various areas in the Province necessitate the operation of generation located in diverse geographic locations, and the scheduling of generation operating reserves which must be held in readiness to replace unforeseeable failure of generating units.

Minimum cost considerations lead to specific "stacking" or "merit" order loadings of generation. At present these are generally aimed at achieving least possible use of coal and oil.

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1.3.9 Power Flows in Transmission Lines

As a result of the above factors, and others (eg. seasonal changes in output from hydraulic generation, purchases from and sales to systems outside Ontario, restrictions in fossil-fuelled generation due to air quality considerations, failures of units, failures of transmission and transformation, etc.), patterns of power flows in the bulk power transmission system change from hour to hour and month to month. They also change from year to year as new generating stations and transmission are added to the system.

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1.4 Public Studies and Hearings Affecting Ontario Hydro,
Which Might Assist the Commission

1.4.1 The Advisory Committee on Energy

The Advisory Committee on Energy (ACE) was appointed by an Order in Council dated August 18, 1971 to undertake a comprehensive review to ascertain the future energy requirements and supplies for Ontario, and to make recommendations concerning policies to ensure that these requirements will be met.

The Committee's report was in two Volumes. Volume One, dated December 19, 1972, was a summary and is now out of print. Volume Two, dated March 5, 1973, contains the full text and is currently available from the Ontario Government Book Store, 880 Bay Street, Toronto M5S 1Z8.

1.4.2 The Committee on Government Productivity

The Committee on Government Productivity (COGP) was established in December 1969 to undertake a comprehensive study of the operations of the Ontario Government. The objective of the study was to make recommendations that would improve the integration of Government activity and the productivity of the Government's ministries and its agencies, including Ontario Hydro through Task Force Hydro. The majority of the reports are still available through the Ontario Government Book Store.

1.4.3 Task Force Hydro

Task Force Hydro (TFH) was established in September 1971 by the COGP to examine the operations of Ontario Hydro and to make recommendations as to: its role and place, the most suitable form of internal organization for the future, the financial aspects of its operations, the future role for nuclear power, and the relative merits of greater use of external services.

TFH reported its findings in five reports which were issued between August 15, 1972 and June 29, 1973. Reports One, Three and Four are currently available from the Ontario Government Book Store.

1.4.4 Ontario Energy Board

The Ontario Energy Board Act was revised in 1973 to incorporate review procedures applicable to Ontario Hydro. The Minister of Energy is required to refer all proposals by Ontario Hydro for changes in the bulk power rates to the Ontario Energy Board (OEB) for a public hearing and a report. The Minister may also refer to the OEB any matter affecting rates, including principles and practices respecting power costing, rate-making, financing, service reliability, system expansion and operations.

The OEB conducted hearings in early 1974 on Ontario Hydro's system expansion program and financial policies and objectives. Subsequent to these hearings a second set of hearings was held with respect to Hydro's proposed 1975 bulk power rates.

The OEB issued two reports on these two sets of hearings (currently available at the Ontario Government Book Store) in which a number of recommendations were made that Ontario Hydro should research certain matters in depth. These studies, which are currently underway, are described briefly in section 1.8.

Line
Number

1 Ontario Hydro is currently preparing proposed rates for 1976.
2 By statute, this proposal must be made to the Minister of Energy
3 no later than May 1, 1975 if the the rates are to become effective
4 January 1, 1976.

5
6 1.4.5 The Solandt Commission
7

8 The Solandt Commission was appointed in June 1972 pursuant to
9 the provisions of the Public Inquiries Act, 1971, to inquire into
10 and make recommendations on the transmission of power between
11 Nanticoke and Pickering. Dr. Solandt submitted his report to the
12 Provincial Secretary for Resources Development in March 1974
13 (currently available in the Ontario Government Book Store).
14

15 Dr. Solandt conducted a second set of hearings with respect
16 to the proposed 500 kV transmission from Lennox to Oshawa. The
17 report on these hearings has not been submitted yet but is
18 expected soon.
19

20 1.4.6 The National Energy Board
21

22 The National Energy Board (NEB) conducts studies on resources
23 availability and hearings on applications for licences to export
24 gas, oil and electricity. In order to construct and operate
25 international interconnection facilities, Ontario Hydro must apply
26 to and appear before the NEB to obtain certificates of necessity
27 for the facilities and an export licence.
28

29 Ontario Hydro's current export licence expires at the end of
30 1975 and the NEB is expected to schedule hearings on Hydro's
31 application for a new ten year licence to begin sometime during
32 the summer. The new export licence is necessary for Ontario Hydro
33 to remain inter-connected to U.S.A. utilities and to export energy
34 surplus to Canadian requirements, as opportunities and
35 circumstances arise from time to time which makes such transfers
36 advantageous.
37

38 Ontario Hydro appears at other NEB hearings, the outcome of
39 which may affect its operations, such as applications by
40 neighbouring provinces to export power.
41

42 1.4.7 Other Hearings
43

44 From time-to-time Ontario Hydro has appeared at other
45 hearings, such as those heard recently before the Alberta Energy
46 Conservation Board.
47

48 1.5 Public Participation
49

50 Ontario Hydro is committed to a policy of public participation in the
51 planning and implementing of new facilities which have a major impact on the
52 public or the natural environment. The details of Hydro's public
53 participation procedures are contained in Supplement 1. The Commission may
54 wish to review these procedures to ensure that they meet the needs of the
55 public.
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1.6 Ontario Hydro's Relation To the Ontario Government

Ontario Hydro was originally established in 1906 as the Hydro-Electric Power Commission of Ontario. It now operates under The Power Corporation Act, R.S.O. 1970, c.354, as amended.

The Power Commission Amendment Act, 1973, which came into force on March 4, 1974, changed the name of the Corporation to Ontario Hydro and provided that Ontario Hydro should be composed of those persons who, from time to time, comprise its Board of Directors. The Board is composed of a Chairman, Vice-Chairman, President and not more than 10 other Directors. The Chairman and each of the Directors are appointed by the Lieutenant Governor in Council.

The Board directs and controls the business and affairs of the Corporation (S.O. 1973, c.57, s.4) and, in practice, forms the link between Ontario Hydro and the Government of Ontario, represented by the Minister of Energy who is charged with the administration of The Power Corporation Act (The Ministry of Energy Act, 1973, s.4)

1.7 Public Involvement in the Public Hearings into Ontario Hydro's Long Range Planning Concepts

Ontario Hydro has mailed out approximately 14,000 copies of Report 556 SP entitled "Long Range Planning of the Electric Power System". These mailings include the general distribution of September 30, 1974 and the replies to the advertisement of November 12, 1974. All replies to these mailings will be made available to the Commission.

The general distribution of September 30 was directed at two groups within the public. Approximately 6,500 copies of the report were sent to persons or organizations who it was believed would have an interest in Ontario Hydro's long range planning considerations. A further 4,800 copies of the report were distributed for the information of financial institutions, educational institutions, news media, Chambers of Commerce and various officials of the Provincial, Federal and foreign governments.

In addition to the above public mailings, a copy of the report was sent to every official of the Government of Ontario with the rank or status of a Deputy Minister requesting their comment.

To the end of February replies have been received from thirteen ministries of the Provincial Government, eight municipalities, seven corporations and fifteen persons or groups of persons.

This correspondence by Ontario and others accompanies this submission and is summarized in Supplement 2.

1.8 Ontario Hydro Studies Underway and Proposed

Ontario Hydro has many studies either underway or proposed, the results of which will be of interest to the Commission. Some of these studies may eliminate the need for the Commission or other participants to undertake similar work.

1.8.1 Reliability and Reserves

In response to Opinion 9(b), given in Chapter 15 of the Ontario Energy Board's August 1974 Report on Ontario Hydro's Power System Expansion Program and Financial Policies, Ontario Hydro is initiating a comprehensive study of power system reliability and reserves. The study will be directed by Ontario Hydro, but will probably employ an Advisory Committee of interested parties outside Ontario Hydro. The study will include at least three topics:

*Capacity
Issue*

Line
Number

(i) Evaluation of reliability from the customers' viewpoints. It is hoped this work will be completed within one year.

(ii) Evaluation of wider use of interruptible power contracts, selective load shedding, voltage reduction, etc. It is hoped this work will be completed within one year.

(iii) Development of technical methods for estimating the level of reliability of supply to the customer's premises. It is believed this work will take more than one year to complete.

1.8.2 Studies Related to the Costing and Pricing of Electricity

The Ontario Energy Board's report to the Minister also recommended that Ontario Hydro initiate studies relative to the Costing and Pricing of Electricity. In response, Ontario Hydro has undertaken four major studies in this regard which should be completed during the tenure of the Commission:

(i) Pricing Study

This study will develop recommendations on corporate pricing policies, rate structures and pricing practices for the sale of electrical energy to municipalities, the retail system and direct customers. In addition, recommendations will be made for the resale of electrical energy by municipalities to their customers.

(ii) Costing Study

This study will develop recommendations on the principles and methods of determining electricity costs and their allocation.

(iii) Impact

This study will examine the impact on customers and the economy, of changes in the costing and pricing of electricity.

(iv) Demand-Elasticity

This study will examine and estimate elasticities of demand for electricity with respect to income and price, and estimate cross elasticities with respect to the price of alternate sources of energy.

1.8.3 Financial Studies

Other studies emanating from the Ontario Energy Board Reports concerning productivity measures, depreciation policies and practices, equity financing charges, general financial reserves, overhead policies, interest capitalization and financial markets, have either been completed, are underway, or will be started soon.

Line
Number

1.8.4 Environmental Studies

Ontario Hydro examines environmental effects before station site and line right-of-way acquisition and carries out or commissions detailed studies and surveys during various stages of design, construction, operation and maintenance of generating stations, transformer stations, and transmission lines.

In addition, general studies and surveys are carried out to examine the effects of Hydro's operations on the environment and to establish procedures and controls to reduce these effects. These studies include some that relate to concerns identified by the public, such as the effects of:

- . transmission lines on safety, farming, land values and appearance,
- . warm water discharges on the aquatic organisms of the lakes,
- . alternative forms of power plant cooling.

Ontario Hydro has commissioned the following major environmental studies which are currently underway:

- (i) The Centre for Resources Development at the University of Guelph was retained in the summer of 1972 to conduct a study into the location criteria and environmental impact of high voltage overhead transmission. A final report is expected to be available by mid 1975.
- (ii) A study to establish the nature and degree of the effect of transmission towers on farm field operations in southwestern Ontario, by the Ridgetown College of Agricultural Technology, was commissioned in the spring of 1974 and is expected to be available in the autumn of 1975.

A study by the Kemptville College of Agricultural Technology to examine the effect of transmission towers on farm field operations in eastern Ontario is expected to be undertaken shortly.

1.8.5 Energy Conservation Studies

Ontario Hydro undertakes and commissions studies with the objective of energy conservation during the production and utilization of electrical energy. Action is being taken in three ways:

- . studies are in progress for conservation during the generation of electric energy,
 - . work is being done to improve the efficiency of energy utilization by customers,
 - . customers are being urged to avoid unnecessary consumption.
- (i) The studies in progress for the conservation of energy during the generation of electric energy are as follows:
 - . The use of low grade rejected heat for green house heating and other agricultural applications. Relevant studies should be available during late 1975 and early 1976.

Line
Number

- 1 . The extraction of heat from the electric generation
- 2 cycle for district heating thereby reducing the
- 3 rejected waste heat. Consultants were retained
- 4 in early 1975 by the Ministry of Energy to study
- 5 this application of process heat and a report
- 6 should be available in early 1976.
- 7
- 8 . The substitution of refuse for fuel in a coal fired
- 9 boiler. A report prepared by consultants engaged
- 10 by the Provincial Government is currently available.
- 11
- 12 (ii) The efficiency of energy utilization by customers is being
- 13 improved by:
- 14
- 15 . Monitoring existing all-electric buildings such as
- 16 apartments, schools and offices for inordinate energy
- 17 consumption so that suitable remedial action can be
- 18 taken if appropriate.
- 19
- 20 . Working with architects, consulting engineers and
- 21 builders to provide them with concepts on energy
- 22 conserving systems and techniques.
- 23
- 24 . In conjunction with representatives of energy
- 25 intensive industries and equipment
- 26 manufacturers doing in-plant research to
- 27 ascertain if any significant improvement in
- 28 efficiency can be made.
- 29
- 30 . Working with farmers, their suppliers, and
- 31 representatives of the Ministry of
- 32 Agriculture and Food to provide technical
- 33 training, to recommend the selection and use
- 34 of proper equipment, to assist in improving
- 35 designs for livestock buildings for
- 36 efficient energy utilization and economical
- 37 farm operation, and monitoring farm
- 38 energy consumption in order to provide
- 39 guidance for more efficient operation.
- 40
- 41 . Providing computer programs to assist
- 42 building designers in the design
- 43 of heating, ventilating and water
- 44 heating systems.
- 45
- 46 . Examining various ways of improving the
- 47 efficiency of residential energy
- 48 consumption by evaluating the performance
- 49 of heat pump installations, encouraging
- 50 federal and provincial building codes to
- 51 specify insulation requirements, informing
- 52 the building trades of latest techniques,
- 53 and working with industry through the
- 54 Canadian Standards Association (CSA) in
- 55 developing performance standards
- 56 for electrical appliances.
- 57
- 58 (iii) The program to reduce unnecessary consumption is basically
- 59 one of information and persuasion using:
- 60
- 61 . The news media to encourage residential and commercial
- 62 customers to turn off lights, avoid other wasteful
- 63 practices and improve the insulation in their
- 64 buildings.
- 65

Line
Number

- 1 . Internal information programs to encourage
- 2 employees to be more aware of the energy
- 3 conservation ethic.
- 4
- 5 . More frequent advertising in appropriate media
- 6 to encourage the conservation ethic.
- 7
- 8 . Seminars with plant managers or operators of
- 9 industrial customers to encourage energy conservation,
- 10 provide check lists for their operations, and to
- 11 assist in the formation of energy management
- 12 committees.
- 13

14 1.8.6 Social Cost Studies

15
16 Ontario Hydro has reviewed the methods currently available to
17 determine the social costs and values of the effects on the
18 community of industrial or other processes which have a measurable
19 impact.

20
21 [A study to endeavour to put a value on the social effects of
22 atmospheric pollution due to the export of energy by Ontario Hydro
23 was started in 1974 and is expected to be available in late 1975.
24 Five outside consultants were retained to examine the effects of
25 atmospheric emissions on buildings, textile products, water
26 quality of the Great Lakes, vegetation and animals, and on the
27 general economy. The potential effect on human health of such
28 emissions were reviewed by Hydro's Health and Safety Division.
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2.0 SYSTEM EXPANSION PROJECTS REQUIRING EARLY CONSIDERATION BY THE COMMISSION

It is anticipated that the public hearings and studies of the Commission will require two years or longer during which time the demand for electricity will continue to grow. Because of the long lead times required to bring new projects into service, there are a number of new projects on which work must be commenced during that two-year period if the system is to be adequate to meet the anticipated load up to 1985 with accustomed standards of reliability.

2.1 Priority Projects Identified by the Hon. W.D. McKeough on July 11, 1974

In recognition of the ongoing need for new projects, the Minister of Energy at that time, the Hon W. Darcy McKeough, announced in his statement of July 11, 1974, that Ontario Hydro had been given approval to proceed with studies and public participation in connection with three new projects. The Hon. Allan Grossman, in his statement of March 13, 1975, reaffirmed the priority of these projects and directed the Commission to report only on their need. The environmental and socio-economic considerations will, if necessary, be reviewed by some other appropriate body.

The three projects and their required in-service dates are as follows:

2.1.1 A generating station on the North Channel of Lake Huron with a required in-service date of 1984, and transmission lines to the Sudbury and Toronto areas, each with a required in-service date of 1982. Provision will be made at the generating station site for a possible future heavy water production facility.

2.1.2 Facilities in southwestern Ontario to provide:

- a) A second 500 kV transmission line from the Bruce Nuclear Power Development into the provincial bulk power transmission system, with a required in-service date of 1981.
- b) Additional supply facilities to the London and Kitchener areas. The required in-service date for the initial facilities is 1980.

2.1.3 Supply facilities for the Ottawa and Cornwall areas with a required in-service date for the initial facilities of 1980.

The study areas for these three priority projects are shown on the attached map, Supplement 3. The public participation process on these three projects is underway.

2.2 Additional Priority Projects

Mr. McKeough addressed himself in 1974 only to new projects required for service by 1984 in the Ontario Hydro East System, that is, east of Sault Ste. Marie. It is now apparent that the following additional expansion projects require priority treatment by Ontario Hydro and the Commission.

2.2.1 Selection of four or more further sites for generating stations for the East System. Supplement 3 shows potential zones for generating sites. Each zone has one or more sites capable of being developed as an energy centre, that is, sites which may contain more than one generating station.

2.2.2 Generating capacity for Northwestern Ontario additional to that reviewed by the Ontario Energy Board in 1974.

Line
Number

1 2.2.3 Construction of additional transmission between the East and West
2 Systems.
3

4 Depending upon the duration of the hearings and the outcome of future
5 studies by Ontario Hydro, it is possible that changes may be required in
6 this list of additional priority items. For example, item 2.2.2 or item
7 2.2.3 may be deleted, or further priority projects may be added.
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Line
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3.0 OTHER PROJECTS WHICH SHOULD BE IDENTIFIED

3.1 Projects to be Committed During the Tenure of the Commission

Supplement 4 lists other projects with voltages of 115 kV or above which Ontario Hydro may want to discuss with the Ministries or the public, during the tenure of the Commission, even though they may be outside the purview of the hearings. This list illustrates the very large number of projects under consideration at any time and it is subject to continuing review in the light of further studies and forecasts.

Projects with voltages lower than 115 kV are not included as they normally have a local impact only.

3.2 Hydraulic Generation

There are a number of hydraulic sites which have been considered for development, but on which no commitment is currently proposed during the tenure of the Commission. Some of these sites are listed below for the information of the Commission and other interested persons.

3.2.1 Hydraulic Generation Sites

(i) Further development of the Mississagi River:

There is further potential capacity available for development on the Mississagi River upstream from the existing George W. Rayner G.S., and at the existing Red Rock G.S.

(ii) Albany River Development:

A number of sites are available on the Albany River for potential generating stations. Their development could entail diversions from some other watersheds and it might enhance development of other rivers in Northern Ontario.

(iii) Little Jackfish River Development:

This may be impractical if the Albany River sites are developed.

(iv) Further Development of the English River:

This may be impractical if the Albany River sites are developed.

(v) Further Development of the Niagara River.

3.2.2 Hydraulic Pumped Storage Sites

(i) Delphi Point Pumping-Generating Station (P.G.S.):

This site is near Collingwood.

(ii) Lake Erie to Lake Ontario P.G.S.:

This site is located on the Niagara Peninsula.

(iii) Matabichuan P.G.S.:

This site is near Lake Temiskaming.

Line
Number

3.3 Thermal Generating Sites

As noted on Supplement 3 further study may result in additions to or deletions of some of the potential zones for new generating sites shown in the supplement.

Supplement 3 does not identify the following possibilities:

(i) Onakawana:

A field of lignite exists south of Moosonee, with the capability of fuelling about 900 MW or more of generating capacity, and there is a potential generating site nearby.

(ii) Clarkson:

This small site in Mississauga was acquired a few years ago but has not been developed. It is not large enough to accommodate a large above-ground generating station.

(iii) Expansion at the following locations is feasible:

Thunder Bay G.S., Lennox G.S., Wesleyville and Darlington (Bowmanville). There is also some possibility of installing additional generating capacity at Lambton G.S. and Bruce G.S. in the future.

Line
Number

4.0 DESIRED DATES FOR PROJECT RECOMMENDATIONS

The public participation process and review of Ontario Hydro's projects by various agencies has significantly increased planning lead times. Ontario Hydro estimates that a minimum of approximately 3-1/2 years are required to carry out the public participation process and obtain Government approval for a major transmission line route. After Government approval for property acquisition and line construction has been obtained, approximately 4 years are required to survey and acquire the property, design the line and transformer station facilities, order the material and construct the facilities. Thus, the total elapsed time is 7-1/2 years for a major transmission line. The corresponding time for a generating station on a new site is 11 to 12 years. It must be emphasized that these estimates are minimum times only. Because of the uncertainties that are necessarily a part of the public participation process, the times required may be 2 or 3 years longer than those estimated.

Supplement 5, Sheet 1 shows the times involved for the principal steps for the high priority projects, which are:

- (i) North Channel generating station and transmission lines to the Sudbury and Toronto areas;
- (ii) Facilities in southwestern Ontario to incorporate the Bruce Nuclear Power Development into the bulk power transmission system and to provide additional supply to the London and Kitchener areas;
- (iii) Supply to the Ottawa and Cornwall areas; and
- (iv) Selection of four or more further sites for generating stations in the East System. (Only two of which are shown in the schedules of Supplement 5)

Generally, the Public Participation Procedures for major area development studies are divided into two phases. The initial phase starts with a decision by Ontario Hydro to proceed with a project. Ontario Hydro proposals are reviewed with the Government Ministries, and this is followed by a request to the Minister of Energy for Government approval to initiate public discussions. Following this approval, Ontario Hydro publicly announces that a study is underway and meets with the Government Ministries, local authorities, special interest groups and individuals to discuss the need for the facilities, and alternative plans for the development of transmission and generation. The discussions include consideration of the methodology to be used during the study and the regional environmental assessments.

The initial phase of the Public Participation Procedure culminates in a report by Ontario Hydro to the Minister of Energy which substantiates the need for additional facilities, compares alternative plans and preferably recommends a single plan. The plan includes a recommendation regarding generating facilities, the voltage, number and types of tower lines, and the general areas for locating transmission lines, transformer stations and generating stations. The report seeks approval for the recommended plan and for locating the recommended facilities within defined geographic areas.

In the second phase of the Public Participation Procedure the study is concentrated in the geographic areas defined in the initial phase, to permit a more intensive environmental study and a more detailed dialogue with the public located within these areas and with other interested parties. The study of the second phase culminates in a final report by Ontario Hydro which seeks the approval of the Minister of Energy to acquire specific line routes and station sites and, where applicable, to construct specific facilities.

Line
Number

1 Following Government approval, Ontario Hydro can begin land
2 acquisition. Under existing procedures Ontario Hydro can then begin
3 construction of transmission lines and terminal stations. However, it
4 cannot begin construction of a generating station until it submits a
5 detailed environmental assessment and proposal for the specific facilities
6 planned for the site and received final Government approval of them.
7

8 While it would be desirable for Ontario Hydro to obtain the decision of
9 the Minister of Energy on the report of the initial phase before starting
10 the second phase of the Public Participation Procedure, Ontario Hydro
11 believes that the need for the priority projects described in Sections 2.1
12 and 2.2 is so pressing that the second phase should be started prior to
13 obtaining the Minister of Energy's decision on the initial proposals, and
14 the schedules of Supplement 5 are based on this suggested procedure. If the
15 Minister's approval is not obtained, some of the second phase activities
16 that have been carried out may prove to have been wasted, and the scheduled
17 in-service dates shown in Supplement 5 will not be met.
18

19 Ontario Hydro's initial phase of the Public Participation Procedure for
20 the three priority projects identified by Mr. McKeough on July 11, 1974 is
21 underway. The public participation program for the North Channel Generating
22 Station is further advanced than that of the other projects. A report
23 recommending that options be acquired to purchase a specific site and a plan
24 for the transmission from the site to the Sudbury area is scheduled for
25 completion in August, 1975. Another report with a plan for the transmission
26 from Sudbury to Toronto is scheduled for completion in March 1976.
27

28 Property acquisition for the North Channel generating site is scheduled
29 to commence immediately after Government approval of the initial report.
30 The subsequent environmental assessment will be done following property
31 acquisition but prior to final Government approval to proceed with the
32 project.
33

34 The completion dates of the initial reports for the other priority
35 projects identified by the Hon. W.D. McKeough are currently scheduled as
36 follows:
37

38 Southwestern Ontario transmission - January 1976
39 Supply to Ottawa-Cornwall - February 1976
40

41 To enable completion of the initial phase reports for these two
42 projects and the Sudbury to Toronto transmission it will be necessary, by
43 January 1976, to complete the initial report for the additional East System
44 generating sites described in Section 2.2.1. This report will recommend the
45 general areas for new generating sites and will identify potential zones for
46 sites in these areas.
47

48 The above schedules are extremely tight and the actual dates could be
49 significantly later for the following reasons:
50

- 51 1. The studies that Ontario Hydro is able to carry out in the time
52 available may not adequately satisfy the concerns of the Government
53 Ministries and the public. It may be necessary to extend these studies
54 beyond the time allowed for in the current schedule.
55
- 56 2. The public participation process requires input from the Government and
57 the public in response to Hydro's proposals. Ontario Hydro is unable
58 to control the time taken for this response and it may take
59 considerably longer than has been assumed.
60

61 Nonetheless, assuming that the above schedules for the initial reports
62 can be met, and that the ensuing work follows the schedules shown in
63 Supplement 5, Sheets 1 and 2, the in-service dates required to meet Ontario
64 Hydro's planning criteria for reliability and cost, as compared to the
65 earliest practicable scheduled in-service dates are as follows:

Line
Number

		In-Service Dates of Facilities		
		Required Date	Sched uled Date	Late- ness in Months
<u>Northern Ontario</u>				
	Northern Channel GS Site	Apr 84	Jan 85	9
	Line, GS site to Sudbury	Oct 82	Jul 83	9
	Line, Sudbury to Toronto	Oct 82	Oct 83	12
<u>Southwestern Ontario</u>				
	Second Line from Bruce	Apr 81	Apr 82	12
	Supply to London-Kitchener	Oct 80	Apr 82	18
<u>Eastern Ontario</u>				
	Supply to Ottawa-Cornwall	Oct 80	Apr 82	18
<u>New East System Generating Sites</u>				
	First Generating Station			
	- if fossil	Apr 85	Sep 85	5
	- if nuclear as proposed	Apr 85	Sep 86	17
	Second Generating Station			
	- if fossil	Jul 85	Sep 85	2
	- if nuclear as proposed	Jul 85	Sep 86	14

As previously noted the scheduled in-service dates presume that Ontario Hydro will initiate the second phase of the Public Participation Procedures prior to obtaining the Minister of Energy's decision on the proposals of the first phase. If the Minister's approval is not obtained the scheduled in-service dates will not be met.

It is evident that in every case, the scheduled dates on the priority projects are already substantially later than the required dates. This means that the projects will not be ready when required, but the delay in bringing them into service should be minimized, in order to reduce the chances that Ontario Hydro will be unable to supply the load with accustomed levels of reliability.

The initial phase of the Public Participation Procedure for the two priority projects listed in Sections 2.2.2 and 2.2.3 will not be completed until late 1976 or early 1977.

Failure to meet the required in-service dates for all these priority projects may necessitate carrying out a number of costly stop-gap measures. Some of the stop-gap measures which have been considered and are still under study are:

- (1) The installation of large amounts of shunt capacitors.
- (2) Retensioning or restringing of existing 230 kV lines to provide greater power carrying capability.
- (3) The installation of new or the expansion of existing control and relaying schemes to limit the extent and duration of load interruptions.
- (4) Upgrading or expanding existing station facilities to provide greater power carrying capability.
- (5) The purchase of additional firm power from other utilities.
- (6) The installation of additional combustion turbines.

Line
Number

(7) Plan to give priority for the time being to the installation of fossil-fuelled instead of nuclear generation.

(8) Plan for the time being on the earlier installation of additional generating capacity at those existing sites where it is possible to do so, eg. Darlington, Wesleyville and Lennox.

The stop-gap measures which will be undertaken will depend on such considerations as:

- 1) The probable in-service date of a project at the time of committing the stop-gap facilities.
- 2) Trade-offs between customer reliability, and the cost and environmental and social impacts of the stop-gap facilities.
- 3) The lead times of alternative stop-gap facilities, as affected by the public participation process required for them and the availability of labour and material resources.

4.1 Suggested Timing and Sequence of Hearings by Commission

In view of the importance to the electric power supply of placing the priority projects in service at dates as close as possible to the required dates, Ontario Hydro requests the Commission to schedule its activities so that it can deal as early as possible with the questions of the need for the priority projects. The Commission cannot realistically determine such questions of need, however, until the facilities involved in such projects are described to the Commission in the detail contained in the reports of the initial phase of the public participation process described in Section 4.0. The Commission can then make a decision as to the need for those facilities.

In Section 5 of this Submission, Ontario Hydro has listed a number of questions and subjects which in its view should be considered by the Commission during the course of its hearings. It is suggested that the Commission should select from that list, and from questions and subjects put forward by other interested parties, those questions and subjects which are of particular relevance to the issue of need for the priority projects.

It seems unlikely that the Commission can reach decisions and make recommendations as to the need for the priority projects in sufficient time to avoid further substantial delay in proceeding with these projects, unless Ontario Hydro is permitted, in the meantime, to carry on with preliminary work in connection with such projects. If that proves to be the case, Ontario Hydro will request the Commission, if and when necessary, to recommend that Ontario Hydro be granted permission to take specific steps from time to time to continue with the development of the priority projects. For instance, in the case of the North Channel generating site, Hydro will probably request the Commission to recommend that permission be granted to obtain conditional options on the land at the site designated in the initial phase report so that an environmental assessment of that site can be completed in 1976.

Recommendations for other conditional authorizations will probably be required in the case of the other priority projects, depending upon the time required for the hearings of the Commission.

The position of Ontario Hydro is that the failure to proceed with these projects as quickly as possible at the present time involves a failure to make provision to supply the load expected to be on the system with the accustomed degree of reliability. Such failure involves a committal for the

Line
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1 future to the same extent as does the decision to proceed with particular
2 works at this time. We lose our options by declining to act.
3

4 Furthermore, the delay due to not acting will result in very
5 substantial increases in operating costs, because it will be necessary to
6 use higher cost generating stations until the new stations with lower
7 operating costs come on stream. For example, as mentioned in Section 1.1,
8 there has been a one-year deferment in the case of the Darlington Nuclear
9 Generating Station and it is estimated that such deferment will cost an
10 additional \$500 million for replacement fossil fuel and energy purchases.
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5.0 QUESTIONS AND SUBJECTS SUGGESTED BY
ONTARIO HYDRO

In announcing the appointment of Dr. Porter as Chairman of the Commission, the Provincial Secretary for Resources Development stated that the Commission would focus on the broad conceptual consequences of alternative ways of supplying sufficient electric power during the period of 1983 to 1993, while also examining more technical matters including electrical load growth, system reliability, the management of heat discharge from generating stations, power pooling and linkages with neighbouring utilities, technology and the security of fuel supplies. He emphasized that the Commission would be concerned more with broad planning principles and concepts than with narrow technical details. He said, in part:

"The public needs to know what demands for electricity will be placed upon Ontario Hydro in the long term, how these needs should be met, and what impact this would have on Ontario's way of life and its physical environment."

The range of subject matters and questions which the Commission could consider in arriving at recommendations for broad planning principles and concepts, as well as dealing with the specific technical matters within its terms of reference, is very wide.

It is suggested that the Commission should consider holding its hearings in several stages. The questions and subjects to be reviewed during the first stage would be those having particular relevance to the issue of need for the priority projects. The remaining questions and subjects could be grouped according to their importance. Hearings could be held and recommendations made with respect to the more important questions and subjects, before going on to deal with the less important questions and subjects.

The list of possible questions and subjects contained in the following pages has been prepared by Ontario Hydro on the basis of its own experience, the public reaction to its Long Range Planning Report and other expressions of public concern which have come to its notice. The headings used for the groups of questions conform with the eight basic matters to be considered in planning and implementing changes in the electric power system as set out in Section 0.0.

Line
Number

5.1 Need for Facilities

The need for facilities depends primarily on two factors:

- (i) the anticipated future electric load (power, energy, hour-by-hour characteristics, and location), and
- (ii) the quality of supply to be provided (reliability, voltage and frequency).

The following questions and subjects relate to this matter:

1. Should more steps be taken to encourage voluntary conservation of energy? If so, what should be done by Hydro, and what should be done by other agencies?
2. In forecasting the future load to be on the system, what allowance should be made for the effectiveness of voluntary conservation measures?
3. Should there be mandatory restrictions on the use of energy? If so, what restrictions, if any, should be imposed on the use of electricity by industrial, commercial, residential and institutional users and who should impose them?
4. The procedures presently used by Ontario Hydro to prepare the load forecast for the next ten years and beyond including the following:
 - . amount,
 - . load characteristics,
 - . geographical locations,
 - . effects of conservation,
 - . effects of rate structures,
 - . availability and prices of alternate energy forms,
 - . population growth and distribution.
5. The present rate structure is intended to provide an equitable allocation of costs between municipalities, direct industrial and rural retail customers. Should the rate structure be used to influence the consumption of electricity?
6. What is the required reliability of supply to the electrical load?
7. Availability, reliability and cost of primary energy supplies, such as, coal, oil, gas, nuclear, hydraulic and purchased power:
 - . importation and transportation of different forms of energy,
 - . implication of uranium exports,
 - . uranium mining problems (health, pollution),
 - . uranium enrichment,
 - . federal/provincial control of uranium,
 - . coal supplies, including Onakawana lignite and concern regarding sulphur content,

Line
Number

- 1 . use of coal vs gas and oil,
- 2
- 3 . further processing of uranium in Ontario.
- 4
- 5 8. Reliability of:
- 6
- 7 . generation (station, fuel, heavy water, etc.)
- 8
- 9 . transmission,
- 10
- 11 . distribution,
- 12
- 13 . assistance from interconnections, Canada/U.S.A.
- 14
- 15 9. Amount of reserve generation:
- 16
- 17 . costs and benefits of the size of the reserve margins and system
- 18 reliability goals,
- 19
- 20 . the economic impact of reduced reserves.
- 21
- 22 10. To what extent have the rate structures and other practices of Ontario
- 23 Hydro influenced the distribution of industrial development in the
- 24 Province of Ontario?
- 25
- 26 11. Under what circumstances, if at all, should Ontario Hydro attempt to
- 27 influence the rate or distribution of future development in Ontario
- 28 through its tariffs or by withholding supplies of power in particular
- 29 areas or by any other means?
- 30
- 31 12. Lead times required for new generation and transmission facilities.
- 32
- 33 13. What are the effects of generating unit size on the power system?
- 34
- 35
- 36 14. Will the generating stations, transmission lines and other facilities
- 37 required for the implementation of any of the alternative generation
- 38 programs for the period to 1993 as outlined in Hydro's report no. 556
- 39 SP entitled "Long Range Planning of the Electric Power System" cause an
- 40 unacceptable net deterioration in the quality of life in the Province
- 41 of Ontario?
- 42
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Economics of new 45. growth

Line
Number

1 5.2 Type and Location of Facilities

2 The selection of the type of new facilities depends on two primary
3 factors, which are:

- 4 (i) technical and economic feasibility, and
5
6 (ii) environmental acceptability.
7

8 The following questions and subjects relate to these matters:
9

10 15. Factors to be considered in the selection of generating stations:
11

- 12 . type; fossil, nuclear, or hydraulic,
13
14 . size of acreage and total installed capacity,
15
16 . location; between regions of the Province and within regions,
17 in or outside municipalities,
18
19 . new siting techniques; overhead vs underground, floating on
20 lakes etc.,
21
22 . merits of few energy centres vs a greater number of smaller
23 stations, considering costs, land use and impact on the region,
24
25 . efficiency of generating plant,
26
27 . environmental impact of thermal and nuclear fuelled generation
28 stations,
29
30 . environmental concerns regarding new hydro-electrical developments.
31

32 16. Management of unused heat from thermal-electric generating stations and
33 the relationship with current and possible provincial water policies:
34

- 35 . the scarcity of cooling water and the associated problems of
36 allocating cooling water among alternative users,
37
38 . taxes and royalties for water use,
39
40 . use of cooling towers, ponds, etc.,
41
42 . beneficial use of waste heat.
43

44 17. Emissions to the environment from Ontario Hydro plants:
45

- 46 . emissions from thermal stations including SO₂, NO_x, and particulates,
47
48 . emissions from nuclear stations,
49
50 . emissions from heavy water plants.
51

52 18. Waste product transport, storage and processing;
53

- 54 . non-radioactive,
55
56 . radioactive.
57

58 19. The direct and indirect impacts of locating generating stations near
59 communities:
60

- 61 . income generated,
62
63 . employment effects,
64
65

- Line
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- 1 . demands for services, schools, housing, roads, etc.,
 - 2
 - 3 . economic opportunities created,
 - 4
 - 5 . social impacts.
 - 6
20. What is the appropriate size of a generating station? How many
stations on one site?
21. Various aspects of nuclear safety:
- 12 . reactors,
 - 13
 - 14 . waste disposal,
 - 15
 - 16 . contingency plans,
 - 17
 - 18 . federal/provincial control.
 - 19
22. Who should be responsible for research into new methods of developing
or transmitting electrical energy and what amounts of public money
should be spent on different types of research into the following:
- 24 . energy storage
 - 25
 - 26 . solar energy,
 - 27
 - 28 . wind-power,
 - 29
 - 30 . geothermal power,
 - 31
 - 32 . hydrogen fuel,
 - 33
 - 34 . purchases from other provinces,
 - 35
 - 36 . breeder reactors,
 - 37
 - 38 . nuclear fusion?
 - 39
23. Adequacy of Ontario Hydro's research program with respect to the
development of technology, equipment, and methods needed to adapt the
Ontario Hydro system to changing economic and social criteria and to
its increasingly important role in the Province of Ontario.
24. Factors to be considered in selecting facilities for changes to the
bulk power transmission system:
- 48 . overhead or underground facilities,
 - 49
 - 50 . voltage levels,
 - 51
 - 52 . direct current versus alternating current.
 - 53
25. All effects of high voltage transmission on peoples, animals, plants,
land use, etc. such as:
- 57 . electrical phenomena,
 - 58
 - 59 . agriculture,
 - 60
 - 61 . natural environment,
 - 62
 - 63 . construction practices for agricultural lands,
 - 64
 - 65 . construction practices for natural areas,

Line
Number

- 1 . maintenance practices,
- 2
- 3 . conservation of non-agricultural/non-urban areas,
- 4
- 5 . ecological practices for rights-of-way,
- 6
- 7 . consideration of the natural environment; bush, wet areas, etc.,
- 8
- 9 . aesthetic considerations.
- 10
- 11 26. Procedures under which planning for a line or station can be
- 12 coordinated with urban and regional planning practices such as:
- 13
- 14 . compensation policies,
- 15
- 16 . severance vs lot line construction,
- 17
- 18 . public participation,
- 19
- 20 . public hearings (Planning Act, Expropriation Act, etc.),
- 21
- 22 . provincial land use policies, → pop distribution
- 23
- 24 . provincial/regional plans,
- 25
- 26 . site and route selection,
- 27
- 28 . use of multi-line construction, design of line and location of lines,
- 29
- 30 . multiple or joint uses of sites and rights-of-way.
- 31
- 32 27. To what extent has the construction of generating stations and other
- 33 facilities in rural areas affected land uses including removal of
- 34 agricultural land from production either directly, through occupation
- 35 of such lands, or indirectly, by stimulating industrial, residential
- 36 and commercial development in the vicinity of the facilities?
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social effects - employment

training

native employment

town site development

etc

Line
Number

1 5.3 Design, Construction, Operation and
2 Maintenance of New Facilities
3

4 The questions and subjects relevant to the formulation of guidelines
5 under these headings have been covered in the questions and subjects
6 suggested in Sections 5.1 and 5.2.
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1 5.4 Financial and Economic Considerations
2
3

4 The questions and subjects relevant to the formulation of guidelines
5 for the financial and economic considerations are as follows:

- 6 28. How should Ontario Hydro pay for its system expansion programs? For
7 example:
8
9 . funding of capital expenditures; their relationship to electricity
10 rates and impact on the economy.
11
12 . the effect of Hydro's capital requirements on Canadian capital
13 markets, borrowings and credit rating of the Province of Ontario,
14 and the Canadian balance of payments.
15
16 29. Is Ontario Hydro's system expansion program inflationary, anti-
17 inflationary, or neutral?
18
19 30. Could the Ontario Hydro capital construction program be used as an
20 instrument of a counter-cyclical fiscal policy?
21
22 31. What effect do the Ontario Hydro purchasing policies and capital
23 construction program have on:
24
25 . industries providing equipment, material and other supplies directly
26 to the construction program,
27
28 . imports of equipment and other supplies,
29
30 . export possibilities in the area of electric power generation and
31 transmission technology,
32
33 . export possibilities in industries directly or indirectly
34 affected by the construction program?
35
36 32. What does Ontario Hydro do to coordinate its financial planning with
37 that of the Federal and Provincial Governments?
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5.5 Trade-Offs Inherent in Considering The
Above Matters

Many of the questions and subjects involved in formulating guidelines for trade-offs have been covered. The following additional questions are relevant.

33. A number of trade-off decisions are required in planning and implementing changes to the electric power system. Which of these decisions should be made by:

- (i) Ontario Hydro,
- (ii) Government and its agencies, or
- (iii) by the consumer?

34. How should trade-offs inherent in various aspects of power exports from Ontario be resolved? For example:

- . firm exports to U.S.A.,
- . surplus energy exports to U.S.A.,
- . cost/benefit considerations.

WHY?

(O WHAT LEVEL
WHAT KIND
(eg. Megawatts
Safety Pins)

Line
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5.6 Matters on Which Policy Directions and Coordination
With Government are Necessary

As a delivery agency of the Provincial Government, Ontario Hydro should assist the Government in implementing its policies and objectives. The following questions and subjects are relevant.

35. What will be the total energy requirements of Ontario by type and market sector? What role should Ontario Hydro have in meeting this requirement?
36. How can this need best be met by available primary sources of energy, eg, oil, gas, coal (all forms), nuclear, hydraulic, solar, geothermal, etc.? Best in this case means best from long and short term considerations relating to factors such as:
 - . social needs,
 - . economic limitations,
 - . environmental limitations,
 - . technological limitations,
 - . availability and security of supply,
 - . the relation between point of production, the distribution system, and the point of use.
37. What means are available to direct consumers of energy to the best use of available primary energy and to wise management ("conservation") of energy consumption? To what extent will these means be effective and what will be the actual use of energy, as contrasted with the best use with wise management?
38. How can the activities of Ontario Hydro best be coordinated with those of the Government's ministries?
39. The intergovernmental aspects of cooperation, consultation and commercial ties with neighbouring utilities in Canada and the United States should be considered.
40. Should an inter-provincial/national transmission grid be investigated further?.
41. The manpower implications of Ontario Hydro's plans with respect to its own labour force are potentially significant and may require consideration of:
 - . sources of manpower (region or province),
 - . job training by Ontario Hydro or others,
 - . availability of manpower and competition with other industries for manpower,
 - . effects on wage rates,
 - . manpower mobility and its consequences.

Line
Number

1 **6.0 USE OF CONSULTANTS**

2
3 Ontario Hydro would like to suggest that the Commission consider
4 engaging consultants to undertake studies which Hydro cannot undertake or
5 which for any reason should be undertaken by an independent body.
6

7
8 Ontario Hydro suggests that the Commission should limit the allocation
9 of funds to enable individual participants to retain consultants or
10 undertake studies. Further, Hydro recommends that the Commission should
11 assess the need for studies proposed by participants and itself retain and
12 direct consultants for studies that are warranted. This process should
13 result in the most effective use of public funds by providing adequate
14 direction to studies and avoiding wasteful repetition of work by various
15 participants.
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Ontario Hydro Procedures
for
Public Participation
in
Planning
Generation and Transmission System Facilities

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1 The term "public participation" can have many meanings, but for Ontario
2 Hydro it is the process through which concerns of the public become an integral
3 part of the planning of its facilities. The process is one to which the utility
4 is fully committed, both as a principle and a policy.
5

6 The aim is to ensure that the interests and priorities of citizens at large,
7 expressed while working in conjunction with Hydro on a proposed facility, are a
8 part of the recommendations that assist in the decision-making process of
9 government. These recommendations are, of course, ultimately Ontario Hydro's
10 responsibility.
11

12 Who is responsible

13
14 Both Ontario Hydro and the public have a responsibility in the process, but
15 both gain from it. For the public the gain is an obvious one -- and electrical
16 system designed in such a way that it not only serves the public's electrical
17 energy demands but also incorporates the public's values and preferences.
18

19 For Ontario Hydro, which has been entrusted with the task of providing for
20 the electrical needs of the province, the gain is one of doing the job in the
21 way which is acceptable to the majority of the people.
22

23 The Background

24
25 The public involvement process was originally announced and initiated in
26 1972 when it became evident that a large segment of the public was seeking a
27 role in the planning of Ontario Hydro facilities.
28

29 In the succeeding years the process has gone through a series of growing
30 pains, but has stayed within the same broad framework. As the initiating
31 statement observed:
32

33 "Since the success of open planning depends upon achieving the maximum
34 in informed public participation, the process must be highly flexible to
35 deal with different needs in different places. It should also be
36 exploratory, in the initial stages, so that it can be refined and improved
37 with experience."
38

39 A many-faceted process

40
41 Today's process is an continuous effort from start to final recommendation
42 whether the facility being proposed is a generating station, major transmission
43 line, transformer or switching station. Although there are many steps in
44 planning a Hydro facility, they tend to blend one into the other and are
45 flexible in application.
46

47 First, the need for facilities is determined and a suggested type of study
48 and its scope are worked out and plans for the methods to be used in evaluating
49 environmental and other factors are made. A time schedule is prepared and data
50 on existing and planned land use and general technical considerations is
51 collected. Then, as many people and organizations as possible are informed of
52 the study.
53

54 Usually, discussions with the general public, government agencies, municipal
55 and other local officials as well as special interest groups take place at this
56 point in the process. At these sessions the need for the facilities and the
57 technical nad environmental requirements are explained. The methodology of the
58 selection process is also discussed and the values and constraints of the
59 various parties determined.
60

61 Data gathered in these discussions and other pertinent items are then
62 reviewed by the Hydro team involved with the project. From this, alternate
63 sites or routes are identified and an environmmetal, technical and economic
64 comparison made.
65

Line
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1 The Hydro team members then usually return to the same groups they have
2 dealt with before and discuss the alternatives and evaluation made by them in
3 order to determine the groups' opinions.

4
5 A report prepared
6

7 A further assessment of the comments and suggestions of the outside groups
8 is made before a report recommending a site or route is prepared. The report
9 contains an environmental, economic and technical analysis of the preferred
10 route or site and also identifies the better of the many alternatives that were
11 identified and evaluated.

12
13 After a review of the report by Ontario Hydro management, it is sent to the
14 Minister of Energy by Hydro's Board of Directors. At the same time copies of
15 the report are normally distributed to other government ministries and
16 individuals and groups who have been involved in the process.

17
18 The Minister of Energy can, after consultation with other ministries,
19 either present the Hydro recommendation of a route or site directly to the
20 Cabinet for a decision or decide that a government-sponsored public hearing is
21 required.

22
23 The public hearings would be conducted by an environmental review body which
24 makes a report to the Minister of the Environment for consultation with the
25 Minister of Energy. The matter is then presented to Cabinet with a
26 recommendation based on the review body's report.

27
28 Ultimately the decision of Cabinet is made public, and Ontario Hydro can
29 proceed with the construction of the facility as accepted or amended by Cabinet.

30
31 Many methods employed
32

33 Throughout the process many different means are used by Hydro to achieve
34 public involvement.

35
36 To make as many people aware of the projects as possible personal contact is
37 made with municipal officials and leaders of special interest groups. Mailings
38 are made to all residents in a study area and letters may be sent to affected
39 property owners. These methods can also be employed to encourage attendance at
40 meetings and information centres.

41
42 In addition to paid advertisements, the news media is supplied with advance
43 news releases as well as being encouraged to attend the activities. Background
44 information for specific media use is also prepared.

45
46 Seminars involving a cross-section of special interest groups, representing
47 such disciplines as agriculture, environment, planning and recreation can be
48 held in the early stages of a study. These might be pursued at both the
49 provincial and local levels.

50
51 Citizen committees, which would examine specific issues within a study area
52 may be created in some instances. These committees would act as advisory groups
53 to the Hydro team involved in the project.

54
55 Members of the Hydro team are available throughout the process to meet
56 informally with citizens and discuss the project. These informal sessions take
57 place either on request from the public or are initiated by team members. This
58 complements the more formal aspects of public participation.

59
60 While large public meetings are still a part of the public participation
61 process, particularly in the case where a great deal of information is to be
62 presented to a general audience, study groups and information centres set up
63 throughout a study area are being relied upon more frequently. The centres
64 provide easy access to information for citizens who may in some way be affected
65 by the project. In addition, the centres can act as a means of gathering

Line
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opinions Similarly, the smaller group meetings provide a better opportunity for meaningful dialogue.

Objectives

In practical terms these activities have three main objectives:

- To provide opportunities for the general public to learn about the project, the proposed study, the need for the facilities and the Ontario Hydro practices, policies and procedures associated with it.
- To enable individuals and interest groups to contribute a local set of values to the formulation of a value system for use in the environmental study along with the specific details about the area in order to lessen the impact of the Hydro facilities.
- To provide a forum for the presentation of significant data and a discussion of alternatives before the route of a line or site of a station is decided.

Ideally, if the objectives are met, the majority of the public should agree that routes and sites produced by the process are the best available.

A concern for all

As might be expected, not all methods of communication with the public are used in every study area. Some studies dictate that all avenues of endeavour be pursued, while others affect so few citizens or are so readily acceptable to those affected, that the public participation process can be minimized.

The length of time taken with public involvement varies considerably for each project. However, based on the experience of the past few years, the length of time between first announcement of a major study and final government approval if a review hearing is required can take from two to four years.

While well invested, the time required for public participation has caused concern for Ontario Hydro, the government and segments of the public. Today it takes from 10 to 12 years from the time a major generating station is committed to a public involvement process until first power is produced. The process obviously adds to the time needed to put facilities into operation and to the cost of doing so. Delay also affects the reliability of the power system which is significant to Ontario's industry and commerce.

It should thus be remembered that new facilities are for the benefit of all the people in Ontario, no matter where they live and work.

Therefore the success of the open planning process for Hydro facilities depends on a high degree of public involvement by a broad cross-section of the public as well as those directly affected by the route of a new line or construction of a new generating station. The interests of everyone should be represented.

For the asking

Any person or group wishing to receive more information about specific studies and projects being carried out in many areas of the province should contact:

Community Relations Department, 12th Floor, Ontario Hydro, 620 University Avenue, TORONTO, Ontario, M5G 1X6

Line
Number

1 Distribution of Report #556 SP, "Long Range Planning of
2 the Electric Power System".
3
4
5

6 Following the submission of the report to the Ontario Government and
7 its subsequent release along with the statement by the Minister of Energy on
8 July 11, 1974, the Corporation endeavoured to provide as many individuals and
9 organizations as possible with a copy of the report.
10

11 Realizing that some would be more interested than others, a mailing of
12 approximately 11,300 copies of the report, along with the July 11 statement by
13 the Minister of Energy, and a letter from the President of Ontario Hydro
14 requesting comment was completed in September. The package was sent to all
15 Ontario M.P.s, M.P.P.s, Deputy Ministers, municipal utilities, municipal
16 clerks,* direct industrial customers, financial institutions, educational
17 institutions, known special interest groups, print and electronic media
18 throughout the province, as well as to various organizations throughout Canada
19 thought to have a general concern in the planning. (Attachment 1).
20

21 Approximately 200 requests were received for an additional 1,200 copies
22 of the report.
23

24 The Corporation however, knew that the mailing, despite its broad base,
25 would not necessarily reach all persons who may have valuable input on the
26 planning process and therefore placed an advertisement (Attachment 2) on
27 November 11, 1974 in all English-language** daily newspapers in Ontario. A
28 coupon was provided so that individuals could clip and forward it to Ontario
29 Hydro in order to receive a report.
30

31 Approximately 900 reports have been requested as a result.
32

33 It is felt that through the above mentioned procedures of direct mail
34 and advertising, reasonable steps to ensure wide distribution to all interested
35 parties, have been taken.
36
37

38 Response of Publics to Report #556 SP, "Long Range Planning of
39 the Electric Power Systems."
40

41 Correspondence, commenting on the report, has been received from
42 thirteen Ministries of the Provincial Government, eight Municipalities, seven
43 Corporations, and fifteen citizens or groups of citizens. (Attachment 3).
44

45 All correspondence is filed in two series, the "G" series for
46 Government and the "P" series for Public and will be presented to the
47 Commission.
48
49

50 * In quantity for circulation to members of council, planning boards, and
51 others.
52

53 ** Since the report was available only in English.
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ATTACHMENT 1

Mailing of Long Range Report
and Letter "A" & "B"

O.M.E.A. - A.M.E.U. Officials	56	
P.U.C. and H.E.C. Chairman & Managers	728	
Direct Customers	93	
Members of Parliament in Ontario	88	
Members of the Senate in Ontario	20	
Intervenors at O.E.B. Hearings	24	
Special Interest Groups	34	
Municipal Clerks:	829 x 6	4974
		6017

* - six copies were forwarded for internal
distribution to planning board etc.

Financial Institutions:

Trust Companies	8	
Investment Brokers	97	
Life Insurance Companies	30	
Chartered Canadian Banks and all Branch Offices in Ontario	2416	2551

Educational Institutions:

- Canadian Universities	21	
- Libraries of Ontario Universities Community Colleges and Secondary Schools in Ontario	947	
- Ontario Public Libraries	324	1292

Utilities:

- Canadian Utilities	32	
- C.E.G.B. and T.V.A.	16	48

Line Number		
1	<u>News Media:</u>	
2		
3	- Ontario Daily and Weekly Newspapers,	
4	Radio and T.V. Stations, and Trade	
5	Magazines	535
6		
7	Ontario Chambers of Commerce and Boards of Trade	197
8		
9	Foreign Government Representatives in Canada	29
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11	Canadian Government Officials	10
12		
13	Ontario Government	
14	- Industrial Development Officers	19
15		
16	International St. Lawrence River Board of Control	10
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18	International Joint Commission	13
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21	In addition, a package was forwarded to the M.P.P.s	
22	and Deputy Ministers of the Ontario Government and	
23	to people whose names were provided by Vice-Presidents,	
24	General Managers and Directors of Ontario Hydro:	<u>698</u>
25		
26		
27	Total	11,419
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29	Reports forwarded as a result of requests due to	
30	September 30 mailing	1,200
31		
32	Reports forwarded as a result of requests due to	
33	newspaper advertisement	<u>900</u>
34		
35	Cumulative Total	<u>13,519</u>
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Line
Number

Long range planning of the electric power system

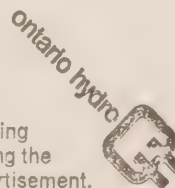
Ontario Hydro has submitted a report to the Ontario Government on the long range planning of the electric power system. The long range plan indicates the possible requirements and location of generating stations and bulk power transmission to supply load in various regions of Ontario up to 1993. The report discusses some of the factors which must be taken into account in the long range planning process, the constraints which are present, and the options and trade-offs available. It presents several alternatives for the future development of the Ontario Hydro system.

In a statement on July 11, 1974, the Minister of Energy announced that the Government intends to submit the report for public hearings and review in terms of environmental effects, socio-economic factors, load growth, system reliability, inter-connection and power pooling, economic analysis governing investment decisions, fuel and heavy water supplies, and operation and maintenance considerations. The date for the hearing has not been set, but it is anticipated that it will start within the next few months.

Ontario Hydro is taking all reasonable steps to encourage public comment on the long range plan and will collect suggestions, recommendations and proposed changes related to the plan.

Hydro has undertaken to have all such comments, which are received up to one month before the public hearings commence, presented to the hearing agency.

Copies of the long range plan have already been sent to individuals, citizens groups and organizations which Hydro believes will be interested and will make comments and suggestions. The report is available to anyone wishing it and may be obtained by returning the coupon at the bottom of this advertisement.



To: Ontario Hydro
620 University Avenue
Room 1174
Toronto, Ontario M5G 1X6

Please send me a copy of your report entitled
"Long Range Planning of the Electric Power System".

NAME _____
(please print)

ADDRESS _____

CITY or TOWN _____ POSTAL CODE _____

Attachment 2

Advertisement
of

November 12, 1974

Line
Number

ATTACHMENT 3

Correspondent
Number

Correspondent
Name

Correspondent Ministries

10	G-1	Ministry of Colleges and Universities
11	G-2	Ministry of Education
12	G-3	Ministry of Health
13	G-4	Ministry of Industry and Tourism
14	G-5	Ministry of Transportation and Communications
15	G-6	Civil Service Commission
16	G-7	Ministry of Agriculture and Food
17	G-8	Ministry of the Environment
18	G-9	Ministry of Natural Resources
19	G-10	Ministry of Government Services
20	G-11	Ministry of Housing
21	G-12	Ministry of Consumer and Commercial Relations
22	G-13	Ministry of Attorney General

Total of 13

Correspondent Municipalities

30	P-3	Elora Ontario; Elora Planning Board,
31	P-4	Kitchener Ontario; The Mayor,
32	P-5	Wollaston Township; The Reeve,
33	P-6	Owen Sound P.U.C.; The General Manager,
34	P-7	Township of Limerick; The Clerk-Treasurer,
35	P-13	Township of Innisfil: The Planning-Coordinator,
36	P-16	Ontario Municipal Electric Association;
37		The Executive Director,
38	P-17	Mississauga; The Clerk's Assistant.

Total of 8

Line
Number

Line Number	Correspondent Number	Correspondent Name
1		
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7		<u>Correspondent Corporations</u>
8	P-2	Dow Chemical of Canada Ltd; The Vice-President
9		Manufacturing,
10	P-9	Boise Cascade; The Chief Engineer,
11	P-10	Shell Canada Ltd; The President,
12	P-11	The Steel Co. of Canada Ltd.; The President,
13	P-12	Central Electricity Generating Board; Secretary
14		to the Chairman,
15	P-18	Ohio Power Siting Commission; Chief, Office
16		of the Ten Year Forecast,
17	P-20	Canadian Electrical Manufacturers' Association;
18		The General Manager.
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20	Total of 7	
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1 2 3 4 5 6	Correspondent Number	Correspondent Name
7	P-1	The Concerned Farmers of the United Townships
8		of Turnberry, Howick, Wallace, Maryborough,
9		Peel, Woolwick, and Pilkington; Mr. L.H.
10		Moore, Chairman, Listowel, Ontario.
11	P-8	The Huron Power Plant Committee; Mr. A. Vos,
12		Chairman, Blyth, Ontario.
13	P-14	Organization HOPE; Mrs. S.S. Lawn, Prescott,
14		Ontario.
15	P-15	The Howick Turnberry Corridor Committee; Mr. G.
16		Adams, Chairman, Wroxeter, Ontario.
17	P-19	Energy Probe
18	P-21	Mr. B.J. VandenHazel, Woodstock, Ontario.
19	P-22	The Waterloo Historical Society; Mrs. Rowell,
20		Secretary-Treasurer, Waterloo, Ontario.
21	P-23	The St. Jacobs Friendly Institute; Mrs. A.
22		Dowling, President, St. Jacobs, Ontario.
23	P-24	The Bruce-Huron Power Negotiating Committee;
24		Mr. D.R. McCallum, Secretary, Wingham, Ontario.
25	P-25	Mr. J. Hartung, Listowel, Ontario.
26	P-26	Mr. R.J. Berlett, Listowel, Ontario.
27	P-27	Mr. & Mrs. H.M. Coulter, Listowel, Ontario.
28	P-28	The Maple Grove Women's Institute; Mrs. R. Hepel,
29		President, Cambridge, Ontario.
30	P-29	Mr. N.W. Weber, Wallenstein, Ontario.
31	P-30	Miss C. Ennis, Peterborough, Ontario.

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34 Total of 15
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Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Hamilton-Stirton TS	1975 (Site)	115-13.8 kV TS	To supply east-central Hamilton
Dundas TS x Horning Mt. Jct.	Dec/75	1.5 mi of 2-cct 230 kV line	To supply Hamilton Area
Harper's Jct x IPL Stations	Oct/75	1.5 mi of 27.6 kV line, rebuild for 115 kV operation	To supply increased loads at Interprovincial Pipelines stations
Mertec x Chapleau	Sep/75	16.7 mi of 1-cct 115 kV line	To supply Mertec Mine
Pinard TS x Spruce Falls P & P Co	Dec/75	53 mi 1-cct 230 kV WP line Alternatively, build line from Little Long GS to SFP & P Co	To supply Kapuskasing Area
Merivale SS x Hawthorne TS	1975	Widen sections of existing r/w to accommodate ultimate of 3x2-cct 230 kV lines	To provide for transmission for future supply to Ottawa Area

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Kingville TS x Woodslee Jct	Jun/76	15 mi 1-cct 115 kV line and expand Kingsville TS site	To supply Kingsville- Leamington Area
Oakville TS	1976	230-27.6 kV station	To supply Oakville Area
Kapuskasing Area	Sept/76	1 mi of 230 kV 1-cct line and expand Kapuskasing TS site	To supply Kapuskasing Area
St. Mary's Cement Co x New Junction	Jun/76	1.9 mi of 1-cct 115 kV line	To supply St. Mary's Cement Co plant
Mertec Smelter x R.H. Martindale	1976	4.5 mi 2-cct 230 kV line	To supply a possible smelter at Coniston
Sarnia-Modeland TS	Sep/76	3.6 mi 2-cct 230 kV line and a 230-27.6 kV TS	To supply Sarnia Area
Sanjo Metals	Sep/76	148 mi of 230 kV 1-cct WP line and a 230 kV SS	To supply Steep Rock Iron Mine at Lake St. Joseph
Wardsville TS	Sep/76	1 mi 1-cct 115 kV line and a 115-27.6 kV TS	To supply rural Kent Area
Bruce x Owen Sound	Oct/76	43.8 mi, 230 kV 2-cct line	To supply Owen Sound Area
Pamour Jct x New Junction	Nov/76	2 mi of 115 kV line	To supply Pamour Mines
Hamilton- Limeridge TS	Nov/76	Site for 230-13.8 kV TS	To supply West Hamilton Area

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Middleport x Cherrywood	1977- 1979	About 160 mi of 2-cct 500 kV line	To connect main load centres to major generat- ing stations
Sunstrum Jct. x Sawmill Jct.	1977	20 mi 115 kV WP line	To supply Sioux Lookout Area
Burlington- Cumberland TS	Sep/77	230-27.6 kV station	To supply Burlington Area
Toronto-Central TS	1977	Short sections of 115 kV UG circuits and a 115 kV TS	To supply downtown Toronto
Ottawa-Browning TS	1977	Short 115 kV line and or 115- 13.2 kV outdoor TS	To supply Ottawa East- Central Area
Essa TS x Barrie TS	1977	Over purchase easements on 5 mi of existing 115 kV r/w	To provide for additional future capacity at Barrie TS
Almonte TS	1977	Short line tap and a 230-44 kV TS	To supply Carlton Place and Almonte
Lindsay TS	1977	16 mi of 2-cct 230 kV line and a 230-44 kV TS	To supply Lindsay-Fenelon Falls Area
Picton TS	1977	21 mi 2-cct 230 kV line with submarine crossing of Long Reach and a 230-44 kV TS	To supply Prince Edward County
Allanburg TS x Niagara Murray TS	Jun/77	5.3 mi 2-cct 115 kV line	To increase supply to Niagara Murray TS
St. Catharines- Bunting TS	Sep/77	2.5 mi of 115 kV line and a 115-13.8 kV TS	To supply St. Catharines
Lakehead x Abitibi Bear Pt. Mill	Aug/77	5.2 mi 1-cct 230 kV WP line	To supply additional load at customer's plant
Dryden Area TS	May/77	230-115 kV TS	To supply Dryden Area

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Lower Notch x Dymond TS x Nine Mile Jct	Sep/77	39 mi 1-cct 230 kV WP line	To supply New Liskeard and Kirkland Lake Area
Crystal Falls Area	Oct/77	Short 2-cct 230 kV line and a 230-44 kV TS	To supply Sturgeon Falls Area
Ecstall Zinc	Dec/77	11.8 mi 1-cct 115 kV WP line from Porcupine TS	To supply customer
Hawkesbury TS	1977	Site for 230-44 kV TS	To supply Hawkesbury Area
Lake Erie Industrial Park	Sep/77	3 mi of r/w for a 2-cct 230 kV line and a site for a 230-27.6 kV TS	To supply Lake Erie Industrial Park
Marathon TS	Sep/77	230-115 kV TS and possibly 4 mi of 115 kV line	To supply Terrace Bay - Marathon-White River areas

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Arnprior GS x Galletta Jct	Apr/78	3.5 mi of 1-cct 230 kV WP Line, To incorporate Arnprior GS relocate Stewartville GS x Arnprior TS x Barrett Chute GS 115 kV line.	
Lennox x Oshawa	Oct/78	115 mi of 2 x 2-cct 500 kV line	To incorporate Lennox GS
Allanburg TS x Atlas Steel	Mar/78	Overbuy easements and widen 6.5 mi of existing r/w to accommodate a 2-cct 230 kV line	To supply new Atlas Steel load
Michigan Jct x Crowland TS	1978	Replace existing 115 kV line with a 4 mi 230 kV line	To supply Welland TS
Cherrywood x Oshawa Area	1978	16 mi of 2x2-cct 500 kV line and 1x4-cct 230 kV line to replace existing 230 kV lines	To connect major load centres to major generat- ing stations
Owen Sound x Wiarton	1978	18 mi 1-cct 115 kV WP line for initial operation at 44 kV	To supply Wiarton Area
Ottawa-Lincoln Heights TS	1978	Site for indoor 115-13.2 kV TS	To supply Ottawa West
Cherrywood TS x Pickering GS	Apr/78	4 mi of 2x2-cct 230 kV line	To incorporate Pickering GS
Leaside TS x Bridgman TS	1978	3.5 mi 230 kV UG cable	To supply St. Clair TS
Toronto-Warden TS	1978	3 mi of 230 kV line and a 230-27.6 kV TS	To supply City of Toronto
Nepean TS	1978 (site)	Short 230 kV tap and a 230- 44 kV TS	To supply area designated for urban development
Downsview TS	Sep/78	3 mi of 230 kV line (probably UG) and a 230-27.6 kV TS	To supply North York Area

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Amherstburg TS	Sep/78	11.5 mi of 2-cct 230 kV line and a 230-27.6 kV TS	To supply Amherstburg TS
London-Central TS	May/78	3.1 mi 2-cct 230 kV line and a 230-27.6/13.8 kV TS	To supply City of London
Barrie-North East TS	1978	About 5 mi 2-cct 230 kV line and a 230-44 kV TS	To supply Barrie Area
Bramalea TS	1978	12 mi of 2-cct 230 kV line and a 230-44 kV TS	To supply South Mississauga and Bramalea
Hamilton-King's Forest TS	Sep/78	230-13.8 kV TS	To supply south-east Hamilton and Saltfleet Satellite City
Woodstock East TS	Nov/78	8 mi of 2-cct 230 kV line and a 230-27.6 kV station	To supply Woodstock Area
Goderich TS	Jul/78 Prop.	16.5 mi of 2-cct 230 kV line and expand Goderich TS site	To supply Goderich Area
Porcupine TS x Kirkland Lake	Aug/78	61 mi of 1-cct 230 kV WP line for initial use at 115 kV	To supply Kirkland Lake Area
Collingwood TS	1978/79	24 mi of 2-cct 230 kV line and a 230-44 kV TS	To supply Collingwood Area
Simcoe TS	Sep/78	7.6 mi r/w for 2-cct 230 kV line and a 230-27.6 kV	To supply Simcoe and Port Dover Areas
St. John's Valley Jct x Hooper's Jct	Jul/78	Overpurchase and widen 2.8 mi of existing r/w for a 2-cct 230 kV line (initial use at 115 kV)	To supply St. Catharines Area
Preston East TS	Sep/78	Site for a 230-27.6 kV TS	To supply Preston Area
Toronto-Charles II TS	1978	115-14 kV TS	To supply City of Toronto

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Toronto-St. Clair TS	1978	About 1 mi 230 kV UG cable and a 115-14 kV TS	To supply City of Toronto
Cherrywood TS x Leaside TS	Sep/78	17 mi of 2-cct 230 kV line to replace existing 1-cct line	To supply Metropolitan Toronto loads
Kenora x O&M P&P Co	Sep/78	10.5 mi of 230 kV line	To supply new customer loads
Dryden Area TS x Ear Falls GS	Dec/78	61 mi 1-cct 230 kV WP line	To supply Ear Falls and Red Lake Areas
Sarnia-South TS	Sep/78	.2 mi 2-cct 230 kV line and a 230-27.6 kV TS	To supply Sarnia Area

Line
Number

1 LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
2 OF 115 kV OR HIGHER
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	<u>Project</u>	<u>I/S</u> <u>Date</u>	<u>Description</u>	<u>Purpose</u>	
10	Bronte TS	1979	230-27.6 kV TS	To supply North Oakville Area	
11	Toronto-Rexdale TS	1979	230-27.6 kV TS	To supply Etobicoke Area	
12	Centralia TS	May-79	21 mi of 2-cct 230 kV line and enlarge Centralia TS	To supply Centralia Area	
13	Louth Jct x St. Catharines - Carlton TS	Sep/79	2.3 mi of 2-cct 230 kV line for initial operation at 115 kV	To increase supply to Carlton TS	
14	Sidney TS x Belleville x Port Hope Jct	Dec/79	79 mi r/w for 2-cct 230 kV line	To supply the Port Hope-Belleville Area	
15	Des Joachims x Chalk River Jct	May/79	19 mi of 1-cct 230 kV WP line initially operated at 115 kV	To supply Deep River-Petawawa Area	

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Halton Area TS x T & NP R/W	Oct/80	5 mi r/w for 8x2-cct 230 kV lines	To supply Lakeshore Area of Mississauga and Oakville
Barwick TS	1980	16 mi of 1-cct 115 kV WP line and a 115-44 kV TS	To supply Barwick and Rainy River Area
Long Lac TS	1980+	18 mi of 1-cct 115 kV WP line and a 115-44 kV TS	To supply Weldwood Co plant and surrounding area
Don Mills TS	1980	3 mi of UG cable and a 230-27.6 kV TS	To supply North York Area
Toronto-Midtown TS	Early 1980's	115-14 kV TS	To supply City of Toronto
Lakehead x Atikokan	1980	130 mi of 2-cct 230 kV line	To supply western part of West System
Midland TS	1980	12 mi r/w for 1 2-cct 230 kV line and a site for a 230- 44 kV TS	To supply Midland Area
Thornhill TS	1980	5 mi 2-cct 230 kV line and a 230-27.6 kV TS	To supply Thornhill Area
Chippawa TS	about 1980	1.5 mi 115 kV line and a 115 kV TS	To supply Niagara Falls South
Gloucester South TS	1980 or after	Short line tap and a 115- 27.6 kV TS	To supply new loads in Blossom Park and South
Marine Jct. x Otonabee TS	1980	2.5 mi of 2-cct 230 kV line and a 230-44 kV TS	To supply Peterborough Area
Toronto-Malvern TS	1980	230-27.6 kV low profile TS	To supply Scarborough
Port Elgin TS	1980	230-44 kV TS	To supply Port Elgin Area
Ottawa-Montreal Rd. TS	1980 or after	Site for indoor 115-13.2 kV TS	To supply Ottawa North- East
Gloucester East TS	about 1980	Site for 230-27.6 kV TS	To supply "Satellite City" near Carlsbad Springs
Espanola Area TS	Dec/80	About 1 mi 2-cct 230 kV line and a 230-115 kV TS	To supply Espanola Area

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Darlington GS x Oshawa Area	1981	12 mi of 2x2-cct 500 kV line	To incorporate Darlington GS
London Northwest TS	Sep/81	5.2 mi 2-cct 230 kV line and a 230-27.6 kV TS	To supply City of London
Chatham West TS	Sep/81	3.25 mi 2-cct 230 kV line and a 230-27.6 kV TS	To supply Chatham Area
Brantford-Lynden Rd. TS	Oct/81	5 mi r/w for 1x2-cct 230 kV line and site for a 230- 27.6 kV TS	To supply industrial loads in the area

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Guelph South Jct x Guelph North Jct	Sep/82	11.5 mi of r/w for a 2-cct 230 kV line (future 4-cct line) partly on existing 115 kV r/w	To provide for change of existing 115 kV Guelph stations to 230 kV
Preston East Jct x Guelph South Jct	Sep/82	8 mi of r/w for a 2-cct 230 kV line (future 4-cct) partly on existing 115 kV r/w	To provide for future supply of Galt-Preston area
Detweiler TS x Preston East TS	Sep/82	Widen 8 mi existing 115 kV r/w to accommodate a 2-cct 230 kV line (future 4-cct)	To relieve existing 115 kV facilities and improve security to Preston-Galt- Guelph loads
North Channel x Mississagi TS	1982	1x2-cct 230 kV line	To supply Great Lakes Power and increase capa- city of E-W tie
Toronto- Rathburn TS	about 1982	230-27.6 kV enclosed TS	To supply Etobicoke Area
Brant TS	1982	7.5 mi r/w for 1x2-cct 230 kV line and site for 230-27.6 kV TS	To supply Paris Area

Line
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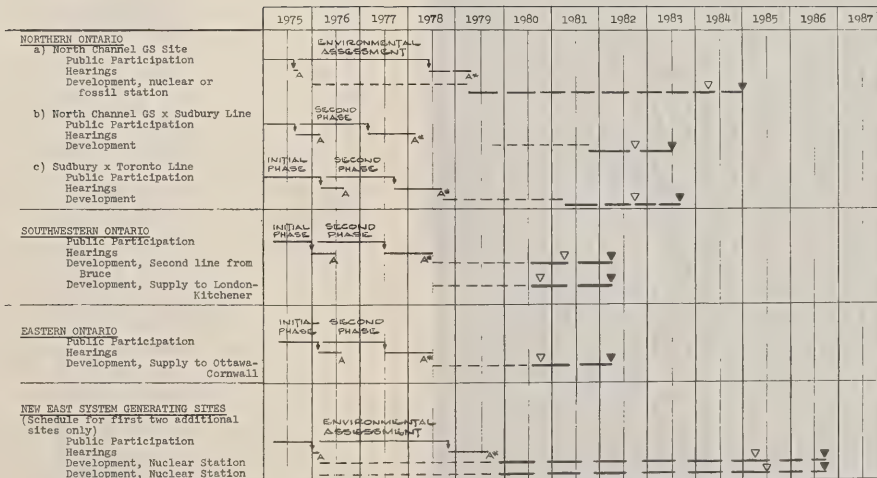
1 LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
2 OF 115 kV OR HIGHER
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	<u>Project</u>	<u>I/S</u> <u>Date</u>	<u>Description</u>	<u>Purpose</u>	
10	Bracebridge TS	1983	4 to 6 mi of 2-cct 230 kV line and a 230-44 kV TS	To supply Bracebridge- Gravenhurst Area	
11	Darlington TS x	Jul/83	16 mi of 2-cct 500 kV line	To incorporate genera- tion on Lake Ontario	
12	Cherrywood TS				
13	Wallaceburg East	Sep/83	.2 mi of 2-cct 230 kV line and a 230-27.6 kV TS	To supply Wallaceburg Area	
14	North Bay TS	Sep/83	5.0 mi of 2-cct 230 kV line and a 230-44 kV TS and 230-27.6 kV TS	To supply North Bay Area	
15	Hamilton-Mohwak TS	Sep/83	Widen 3 mi of 115 kV r/w and enlarge existing station site for conversion to 230 kV	To supply Hamilton Mountain Area	

Line
Number

LIST OF OTHER STATION & TRANSMISSION PROJECTS WITH VOLTAGES
OF 115 kV OR HIGHER

<u>Project</u>	<u>I/S Date</u>	<u>Description</u>	<u>Purpose</u>
Malton North TS	1984	About 10 mi of 2x2-cct 230 kV line and a low profile 230-27.6 kV TS	To supply Malton Area
Gormley TS	1984	About 5 mi of 2-cct 230 kV line and a 230-27.6 kV TS	To supply local load
Guelph South TS	Sep/84	3.5 mi 230 kV 2-cct line and a 230-13.8 kV TS	To supply Guelph Area
Toronto-Sherbourne TS	mid 1980's	115-14 kV enclosed TS	To supply City of Toronto
Sandwich SS x Keith GS	Indef.	Widen r/w to accommodate 2 2-cct 230 kV lines	To provide for transmission to supply Windsor Area



The transmission line schedules assume that Ontario Hydro will initiate the 2nd phase prior to approval of the initial phase proposals.

↓ Ontario Hydro Report to Government

A Approval by Government to proceed with next phase-requires position by Long Range Hearing

A* Approval by Government to proceed with next phase-requires Environmental Assessment

▽ Required In-Service Date; ▼ Earliest Possible in-service date

— MEETINGS, STUDIES, REPORTS

--- SURVEYS, PROPERTY ACQUISITION, DESIGN

— CONSTRUCTION

Completion of Initial Phase (see page 42)			Government Final Approval of Site and Line Routes			In-Service Dates of Facilities		
Required Date	Sched Date	Late- ness in Months	Required Date	Sched Date	Late- ness in Months	Required Date	Sched Date	Late- ness in Months
<u>Northern Ontario</u>				*	*		*	*
Generating Station Site	May 74	Aug 75	15	Jan 75	Oct 75	9		
Generating Station				Jul 78	Apr 79	9	Apr 84	Jan 85
GS x Sudbury Line		Aug 75	0		Mar 78	0	Oct 82	Jul 83
Sudbury x Toronto Line	Sep 74	Mar 76	18	Oct 77	Oct 78	12	Oct 82	Oct 83
<u>Southwestern Ontario</u>								
Second Line from Bruce	Jul 74	Jan 76	18	Jul 77	Jul 78	12	Apr 81	Apr 82
Supply to London-Kitchener	Jan 74	Jan 76	24	Jan 77	Jul 78	18	Oct 80	Apr 82
<u>Eastern Ontario</u>								
Supply to Ottawa-Cornwall	Jan 74	Feb 76	25	Jan 77	Jul 78	18	Oct 80	Apr 82
<u>New East System Generating Sites</u> (Schedule for first two additional sites only)								
First Generating Station Station Site (if nuclear)	Feb 74	Jan 76	23					
Generating Station - if fossil				Apr 79	Sep 79	5	Apr 85	Sep 85
- if nuclear				Apr 78	Sep 79	17	Apr 85	Sep 86
Second Generating Station Station Site (if nuclear)	May 74	Jan 76	20					
Generating Station - if fossil				Jul 79	Sep 79	2	Jul 85	Sep 85
- if nuclear				Jul 78	Sep 79	14	Jul 85	Sep 86

* Failure to start the second phase of the Public Participation Procedures immediately following the completion of the first phase would extend these dates and figures by the period of deferment.

